SEPT. 18 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

Needed: Wiser inventory management ... 15
New information plan for Washington 16
Jersey streamlining to be worldwide 18
Fall hearings could alter gas policy 22
Gas demand sparks Uinta Basin hunt 25
Miscible floods on upswing in Canada 31
How refiners fight water corrosion 46
Big tankers hold the key to survival 59
Tidewater pushes overseas marketing 64
Midwest marketers play hard-to-get 72
Texas jobbers forming own loan source ... 74

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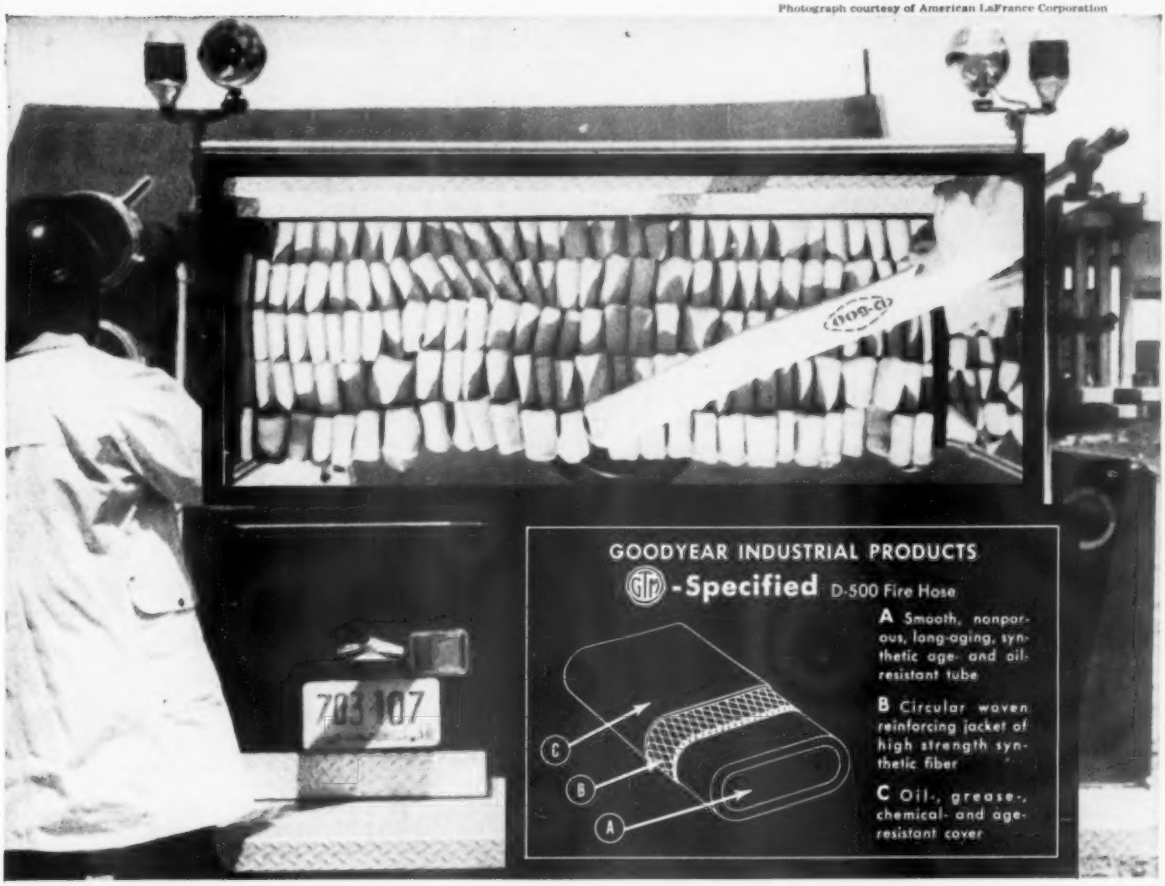
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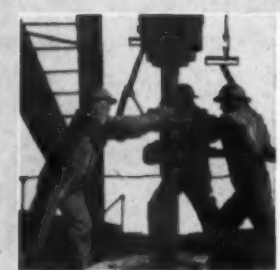

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INSIDE *Slant*

LOOK AT ALL STOCKS

It seems that the only way by which refinery runs will be cut is for the plants to run short of crude.

History of the refining industry clearly indicates that the refiners will continue excessive runs as long as the crude is available.

A possible way to wean the refiners away from the desire to overeat into the crude-supply pie would be for the state conservation agencies to take a look at over-all petroleum supply.

That is, do not consider crude alone, but also take into consideration the product side of the picture, to keep stocks in balance as a whole.

After all, a surplus of products creates just as much above-ground waste as do excessive crude stocks.

It's true that the majority of state regulatory bodies cannot consider manufacturing—refining—but there should not be any deterrents to considering over-all stocks.

There is enough flexibility in transportation and refining today to permit the dispatching of crude to any point where it's needed.

This flexibility would eliminate any possibility of unexpected shortages.

LeRoy Menzing
EDITOR

See why ALCOA ALUMINUM makes a good design habit

Requirement: Increase original service life of process equipment
Key to Good Design: Use Alcoa Aluminum to combat corrosion

Fighting corrosion is one of many ways aluminum can increase the original service life of your equipment. In major segments of the process industries, ALCOA® Aluminum is becoming the accepted standard for doing just this.

Chemical and petroleum plants find many uses for aluminum in their processes. Aluminum towers, driers and building products ward off atmospheric corrosion in seacoast locations, salt mines, and in similarly aggressive environments . . . areas where other metals fail. The electric power industry uses aluminum to resist the corrosive effects of soot, flyash, gases and vapors from the combustion of coal.

The food processing industry takes advantage of aluminum's other important features. Because it looks clean, is easily kept clean, and imparts no color or flavor to the product, aluminum is the best choice for pans, churns and vessels. These aluminum containers also have high heat conductivity . . . an important consideration where heat must be applied to the product.

The brewing and pharmaceutical industries use aluminum for still another reason. Here, process equipment must be nontoxic to micro-organisms. That's why aluminum pasteurizers and other equipment are specified for fermentation reactions in microbiological processes.

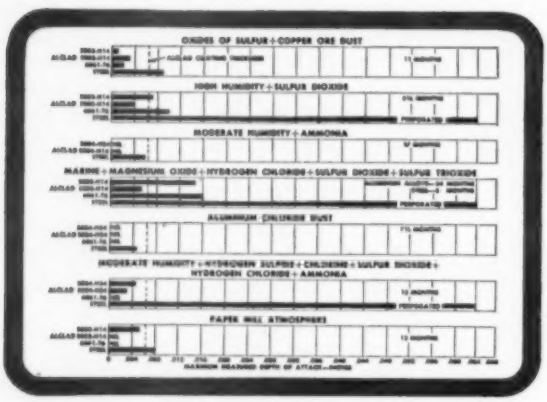
For other processes, aluminum's freedom from embrittlement at extremely low temperatures makes it particularly attractive. Good examples are the production of hydrogen, helium, oxygen, and various other cryogenic substances.

There's an area in your process where ALCOA Aluminum can help cut costs or improve efficiency. ALCOA can help you specify the alloy you need from the wide range available. Each offers specific advantages, and there is one certain to fit your requirements.

ALCOA engineers have worked closely with all segments of the process industries for over 40 years, and their unparalleled experience in this field is available to you for the asking. Write to the address on the coupon, stating your requirements as specifically as possible. ALCOA's development engineers will welcome the opportunity to work with you on your problems.

You also can take advantage of the wide selection of free ALCOA literature on aluminum for process equipment. Simply check the booklets you want on the coupon and mail to the address indicated. ALCOA will forward your material promptly and without obligation.

ALCOA is conducting a series of engineering conferences on process industries applications of aluminum during 1959 in a number of major cities. Contact your nearest ALCOA sales office for full particulars and dates.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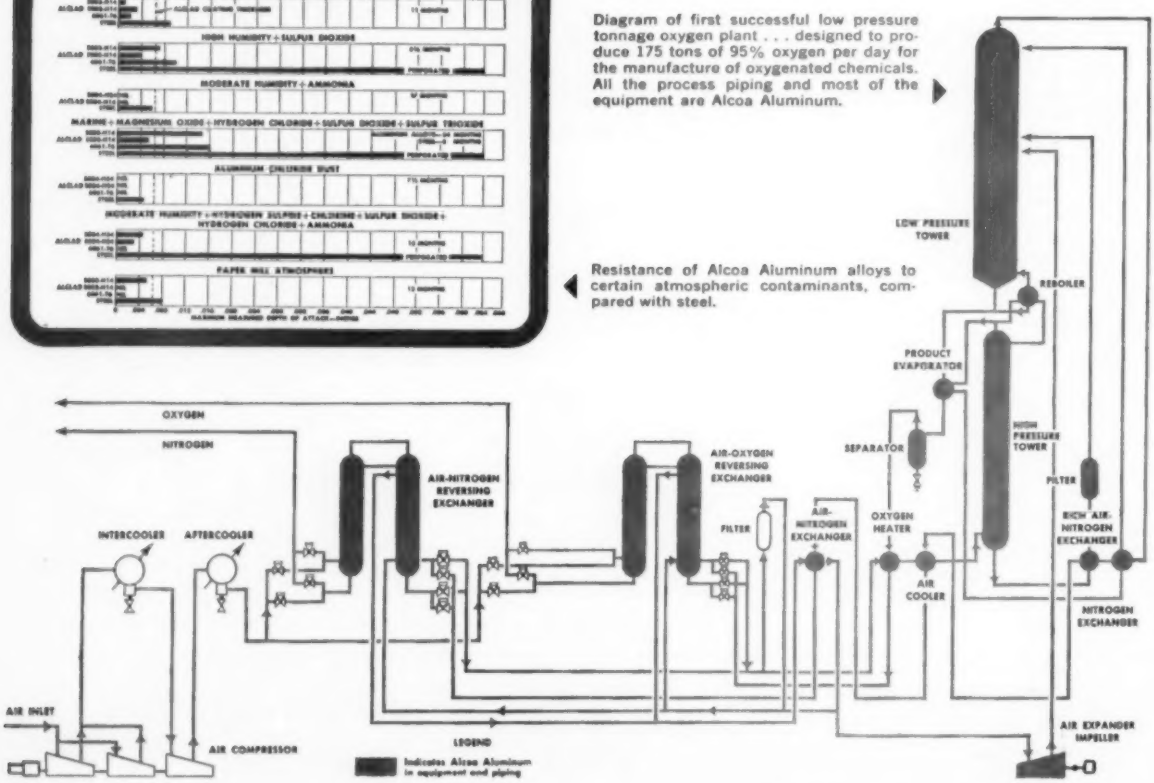
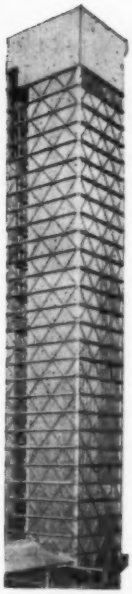
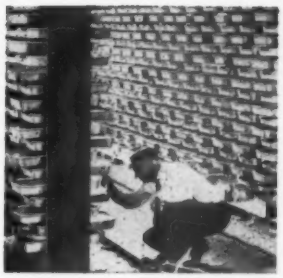
MAXIMUM MEASURED DEPTH OF ATTACK—INCHES

Resistance of Alcoa Aluminum alloys to certain atmospheric contaminants, compared with steel.





An aluminum prilling tower, 260 ft high by 40 ft square, used in the manufacture of solid ammonium nitrate. Auxiliary buildings are also covered with aluminum because of the corrosive atmospheres present.

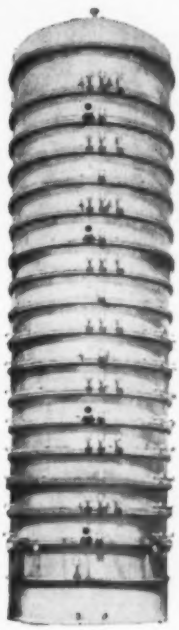


Aluminum solidification pans and molds for solids such as stearic acid and waxes resist corrosion and do not discolor the product.

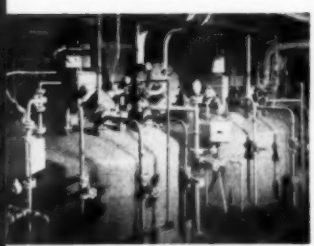
The naval stores industry uses aluminum to protect color and quality of rosin, rosin derivatives, turpentine and similar pine products.

Butter has little tendency to adhere to the cast aluminum surface of this churn.

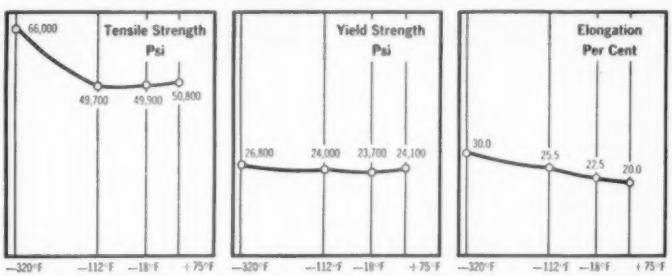
The sanitary appearance of aluminum covers and siding over these brewery pasteurizers is easily maintained.



Large scrubber tower for solvent recovery in a synthetic textile plant.



These 3,000-gal aluminum adsorption tanks are used in the production of antibiotics. Aluminum distribution systems for acetone and deionized water also are shown.



Alcoa Alloy 5456-O is used extensively in process equipment, especially for cryogenic applications. The graphs above show how this alloy's physical properties actually improve at low temperatures. At minus 320 degrees F it improves 30% in tensile strength, over 10% in yield strength and 50% in elongation.

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Please send me the following literature on Alcoa Aluminum applications in the process industries:

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- ☐ GL149—Welded Aluminum Gas Cylinders, ICC approved
- ☐ 10197—Aluminum Pipe and Fittings
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- ☐ 10460—Process Industries Applications of Alcoa Aluminum
- ☐ DD508—Aluminum Alloys in Tank Trucks and Tank Trailers
- ☐ 10387—Alcoa Standard Storage Tanks
- ☐ 20849—Resistance of Aluminum Alloys to Weathering and Resistance of Aluminum Alloys to Chemically Contaminated Atmospheres
- ☐ 20265—Have You Tried Aluminum in Your Refinery?
- ☐ GL93—Aluminum in the Pulp and Paper Industry
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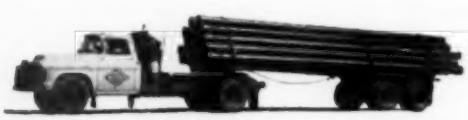
Neighbor, wherever you are, specify Lone Star and we both get a good deal.



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DEPT/Opinions

Views That

"Alaska and the neighboring Canadian West . . . constitute the last frontiers for oil exploration in North America . . . Despite the disappointments and the hardships, the risk is worthwhile."

—T. S. PETERSEN
President
Standard Oil Co. of California

"People in the act and some in the wings joust realistically and philosophically over tariffs and quotas, but at best these restrictions bring relief only from the painful fact that some other country is able to undersell us. The extent to which these barriers need to be employed therefore is a clear measure of competitive weakness."

—GEORGE E. HOLBROOK
Vice-president
E. I. du Pont de Nemours & Co.

"The favored-nation principle serves the national objective of preventing monopolistic encroachment. If the smaller producer were denied access to a reasonable price adjustment through the favored-nation clause, which is often his only recourse, he would soon be unable to meet the costs of exploration and production. Major producers, who have other means of effecting adequate prices, could eventually squeeze the independent operator out of business."

—HARRY C. JONES
President
Texas Independent Producers & Royalty Assn.

"In a world in which the international oil industry faces the problems of excessive production, and the uncertainty of decreased consumption with increased production; when producing countries are worried by the sliding of prices and constant rise of costs; Mexico's irrevocable position is and will be: In our nationalization [of oil], not one step back."

—ADOLPHO LOPEZ MATEOS
President of Mexico

"There will always be places where smaller, locally known companies can handle the petroleum distribution job better than an integrated company. In fact, the impending changes and dislocations created by shifts in population, new highways, and new forms

Make News . . .

of competition may make it more desirable than ever for large suppliers to plan their distribution through local businessmen."

—WILLARD W. WRIGHT
Vice-president, marketing
Sun Oil Co.

"Because of the absolute indispensability of adequate and reliable sources of oil to the survival of this nation . . . we must use wisely what the Creator has generously bestowed upon us. We must continue our efforts to explore for and develop new reservoirs of oil in this country . . . We need an increasing awareness of the importance of oil to us as a nation and as individuals . . . We need to provide the economic and political climate that will stimulate the finding of oil . . ."

—MATTHEW V. CARSON, JR.
Oil Imports Administrator

"Unlike the manufacturer who knows that when he appropriates $100,000 for a factory—he will be sure of getting his factory, the oil man is fighting eight-to-one odds that he will not get oil production with the expenditures appropriated for use in searching for his capital asset—the oil in the ground.

"In view of these facts, it is not hard to see that the search for and development of oil reserves must have differential tax treatment just to be put on a par with other industry."

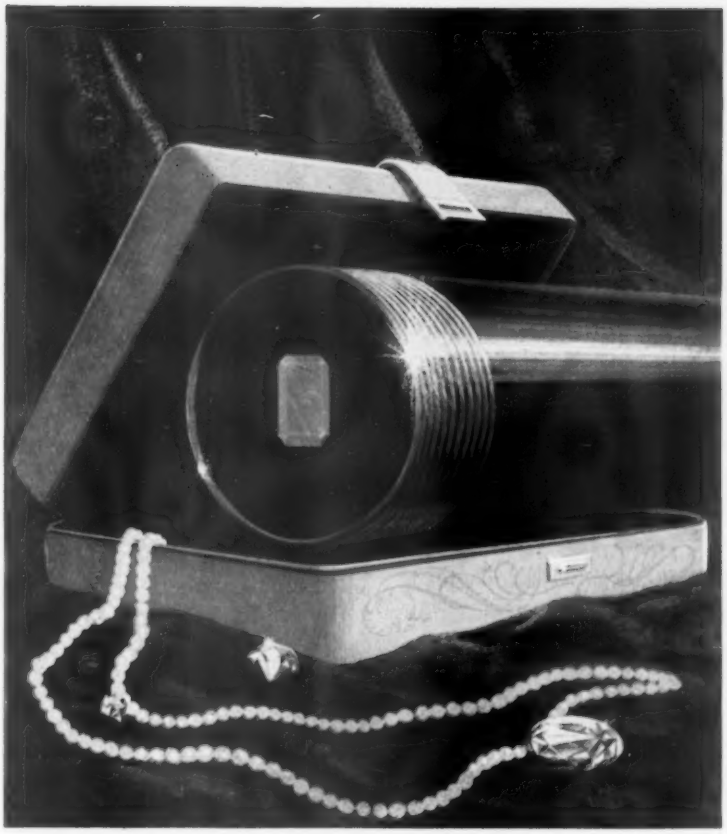
—JOHN JARMAN
Representative in Congress
5th District, Oklahoma

"A favorable business climate, including a realistic approach to taxation, is a significant factor in management planning in these times. It derives in large measure from the need to hold costs at a minimum in order to be competitive."

—A. L. SOLLIDAY
President
Pan American Petroleum Corp.

PETROLEUM WEEK *will publish each week comments from readers on timely, pertinent subjects. Such expressions are welcome.*

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, *330 W. 42nd St., New York 36, N.Y.*



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Every facet of Lone Star pipe-making is subjected to repeated inspection to assure a flawless product. Lone Star API casing, tubing and line pipe . . quality protected from mining of ore to finished pipe . . is the hallmark of fine craftsmanship.

That's why Lone Star is called the gem of the oil and gas industry.

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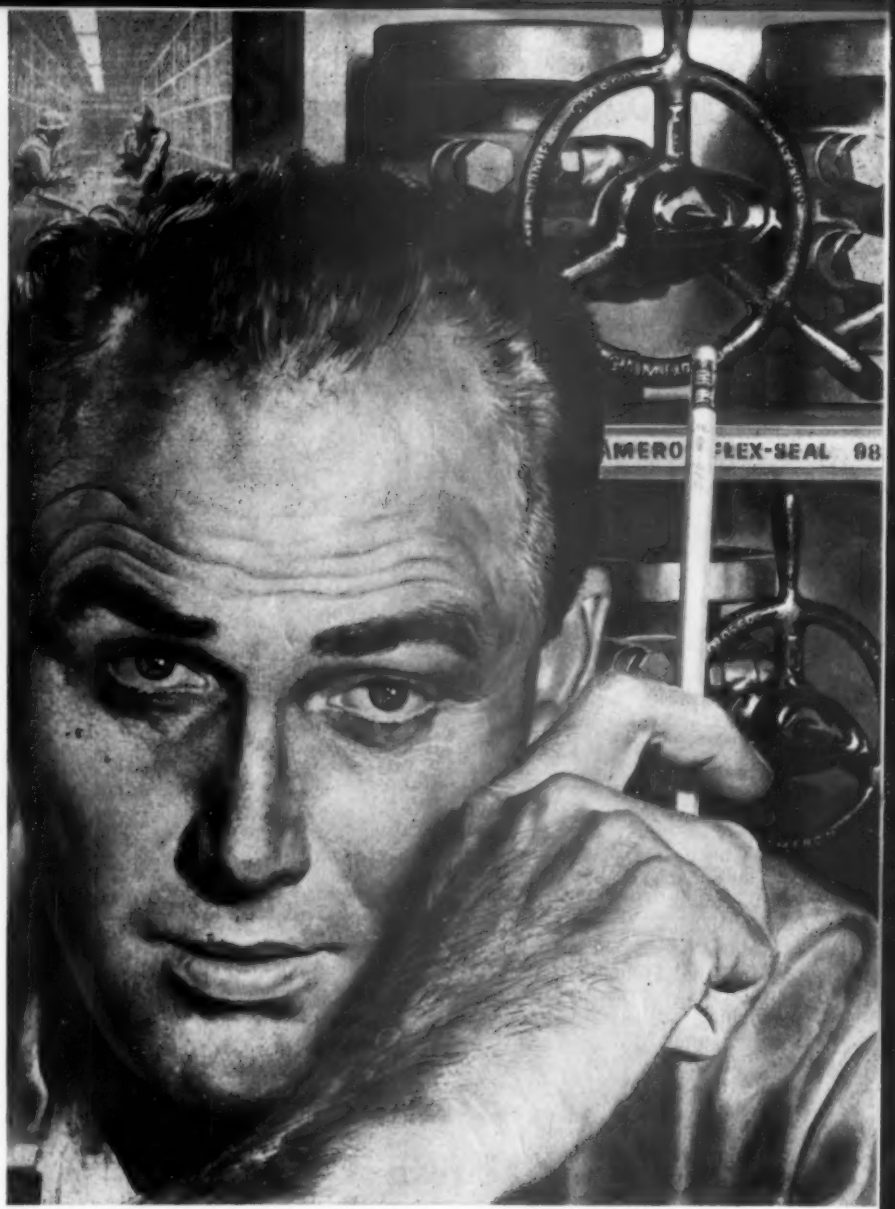
"CAMERON FLEX-SEAL, MOST POPULAR VALVE FOR MUD LINE SERVICE"

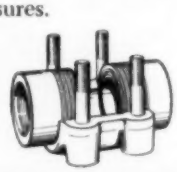


The reason for this remarkable record is Cameron's exclusive design – a basic design which was an immediate success with drillers all over the world. The Cameron Flex-Seal was designed to control the cutting action of abrasive-laden fluid under high pulsating pressure. Over twenty years after its introduction the Flex-Seal is still the favorite of smart operators everywhere – the valve most often asked for in supply stores. Rugged dependability, extra long service, and easy repair spell performance that can't be beat.

Flex-Seals are manufactured in the United States, England, and France. They are available in supply stores throughout the world.

Extended cap nuts protect the all important stud threads from abrasion and corrosion, make bonnet removal extra easy in any position.

Gate and stem are one solid forging, give perfect alignment with no wobble to increase wear. The only mud valve gate with a shoulder – affords energizing of packer. Rubber cannot flow past on tight closures.



Integral welded subs and body cap make misalignment during repairs impossible. If a sub is damaged it may be separated and replaced rather than replacing an expensive body unit.

Tough compound in the big gate packer means lots more wear,

easier repairs. Replacements require no special instructions or fixtures – no intricate positioning of gate stem threads. The oversize carburized steel wear rings are sealed against the subs by "O" rings and are removed straight out with the gate packer as a unit.

Cameron

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60-Second Summary / WHAT'S HAPPENING IN OIL

September 18, 1959

dept/INDEX

Production	25
Pipelines	59
Processing	46
Marketing	74
Washington	22
Statistics	71
The Market Trend	72
Key Prices	73
Editorial	80
International	64
Personals	70
Service & Equipment	78
Petroleum Comments	18

Jake L. Hamon blistered oil's top management for its "unbelievable" record of inventory control. The Dallas producer charged that refinery runs have been much too high, and that the industry has been acting "like a bunch of blithering idiots." . . . p. 15

•

A group of Texas jobbers plans to create its own source of long-term capital. The jobbers are seeking to raise $150,000—to be matched by the Small Business Administration—to form an investment firm. . . . p. 74

•

Growing demand for gas in California is spurring new exploration in Utah's Uinta Basin. Development there so far has been sporadic, due to puzzling geology and small, isolated discoveries. . . . p. 25

•

Jersey Standard's consolidation plans are more extensive than present appearances indicate. They're global in scope, and the newly announced domestic reorganization is only one phase of the multipronged program. . . . p. 18

•

Refiners are trying several new methods, coatings, and materials to fight water corrosion. A trend toward air-cooled heat exchangers, which eases the problem, is taking hold rapidly. . . . p. 46

•

Larger, more efficient tankers are the best answer to today's competitive conditions, some tanker men say. A 45,000-ton vessel can gross four times as much as a war-built T2, studies indicate. . . . p. 59

•

The Mid-Continent Oil & Gas Assn. plans to fill the public-affairs vacuum in Washington. It's setting up a comprehensive program, and hopes to become the principal source of petroleum information in the capital. . . . p. 16

•

Tidewater Oil Co. is pushing its plans to market overseas. A proposed move into Scandinavian markets is now definitely under way. . . . p. 64

•

Small-car talk and sales will change the complexion of the 1960 automobile market. Big cars will continue to dominate the field, but small cars will account for two out of every seven sales. . . . p. 17

•

The trend to miscible flooding in Canada is increasing. One engineer predicts that miscible flooding—wherever and whenever applicable—"will kick waterflood out the window." . . . p. 31

Up to the Minute / SIGNIFICANT LATE NEWS

September 18, 1959

An organizing fight is brewing between the AFL-CIO's Oil, Chemical & Atomic Workers and its Metal Trades Dept. The latter accused OCAW of "destructive" raiding at the big labor group's annual convention this week. OCAW President Jack Knight countered that Metal Trades unions are illegally organizing in his territory. A Metal Trades local is one of four unions seeking recognition at Esso Standard's Baton Rouge refinery.

•

Gulf Coast heating oil prices are showing some signs of recovering from a five-year low of 7.75¢ a gal. for No. 2 cargoes. That price was withdrawn this week, with the low moving up to 8¢ a gal. That is 5/8¢ a gal. below a year ago.

•

Venezuelan President Romulo Betancourt decreed an end to the strike of 450 Richmond Exploration Co. employees. He set up an obligatory arbitration commission to rule on the dispute, which started over the rehiring of workers laid off by a previous production cutback.

•

Jersey Standard's reorganization of Humble Oil & Refining and Socony Mobil's absorption of Magnolia won't violate Texas laws. The state's attorney general ruled this week that there is no legal basis to prevent those corporate changes.

•

The $100-million Texas-to-New York pipeline proposal of Missouri-Kansas-Texas R.R. has been abandoned. Instead, officials now are thinking in terms of a $55-million products pipeline from West Texas to the Upper Midwest.

•

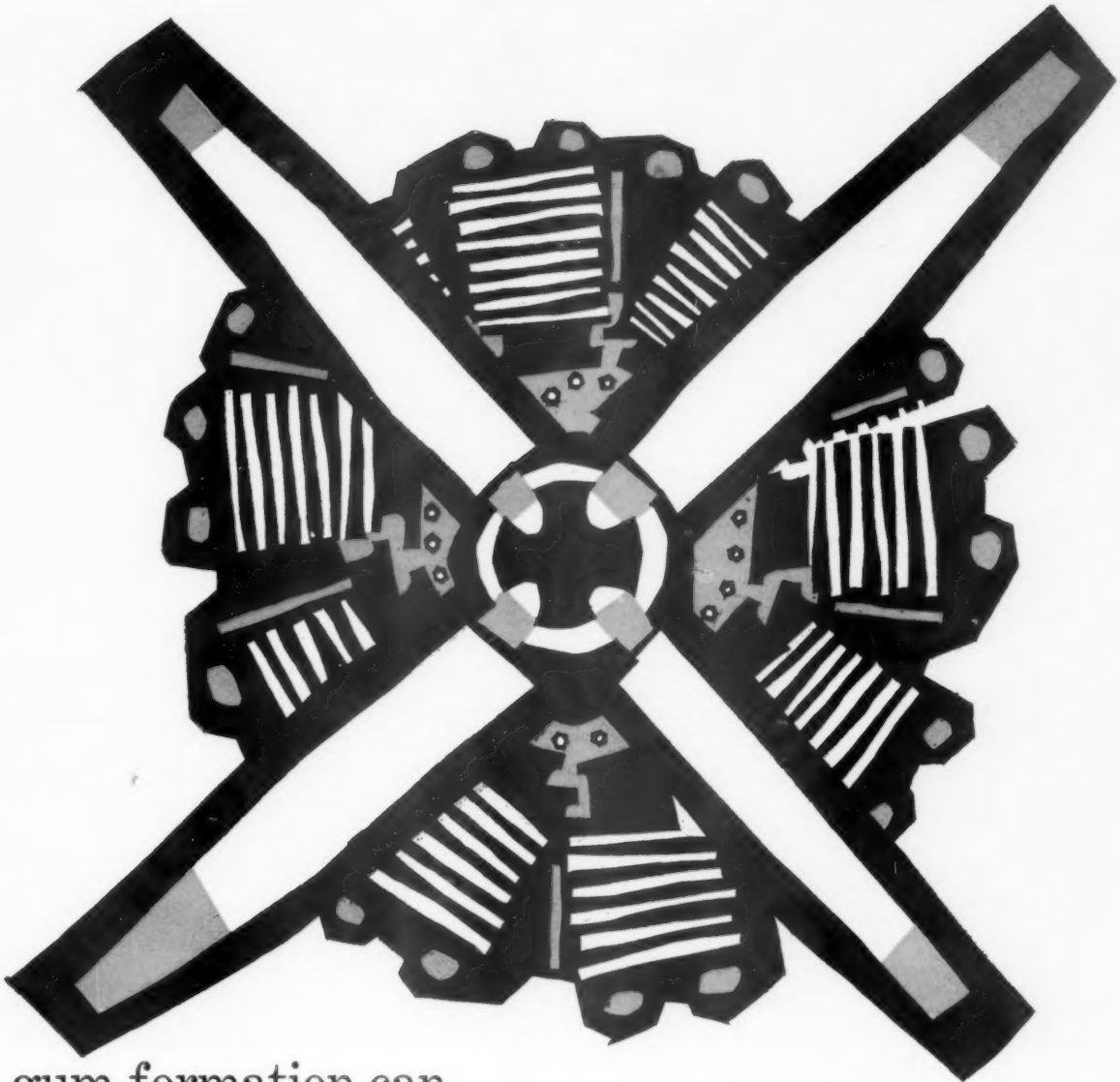
Marketers are planning a new national organization to promote oil heat. The group, being created by an American Petroleum Institute "task force," will have a promotional budget exceeding the $1.8-million of the present National Fueloil Council, but well below the $5.2-million allocated by the American Gas Assn. to promote gas heat this year.

•

The Interior Dept. wants to make sure that pipeline rights of way in the outer continental shelf cannot be blocked. A proposed new regulation would insure that a holder whose right of way runs parallel to the coastline cannot arbitrarily block others by refusing permission to cross his area.

•

The National Petroleum Assn.'s new president is Rexford S. Blazer, chairman of Ashland Oil & Refining Co. He was elected Wednesday to succeed Quaker State Oil Refining Corp.'s Guy B. Hunter. Vice-presidents are John E. Selden, president of South Penn Oil Co., and L. E. Kincannon, executive vice-president of Rock Island Refining Co.



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Two, Eastman, as a basic manufacturer of the additives it supplies, maintains complete control every step of the way, assuring you of a uniform product and consistent additive performance.

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You'll find Eastman petroleum specialists can give you unequalled technical service because inhibition of gum formation is their only interest. EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, N. C.; Houston; New York City; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Denver; Los Angeles; Phoenix; Salt Lake City; Seattle.

TEX-TUBE Teamwork delivers the

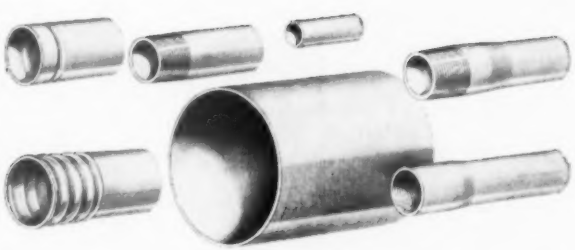
Tex-Tube's reputation for *having the goods* and *meeting its schedules* is not accidental. It is the result of close teamwork between sales-service, warehousing and mill facilities.

The sales department provides continuous and detailed feedback from the field which enables Tex-Tube to forecast pipe needs in the months ahead. This information is used in determining mill schedules and maintaining well balanced stockpiles of line pipe, oil well casing and tubing, and structural and mechanical tubing. At Houston and six other locations in the South and Southwest, every type and size of tubular goods are available—often for immediate shipment to your job.

Tex-Tube's ability to keep *ahead of the market* means dependable, on-time service for you.

Photo left shows Tex-Tube semi-trailer loaded with 282 joints of 3½" OD grooved tubing. This quick-coupled pipe is made by Tex-Tube for use with Victaulic Company of America couplings.

goods on schedule



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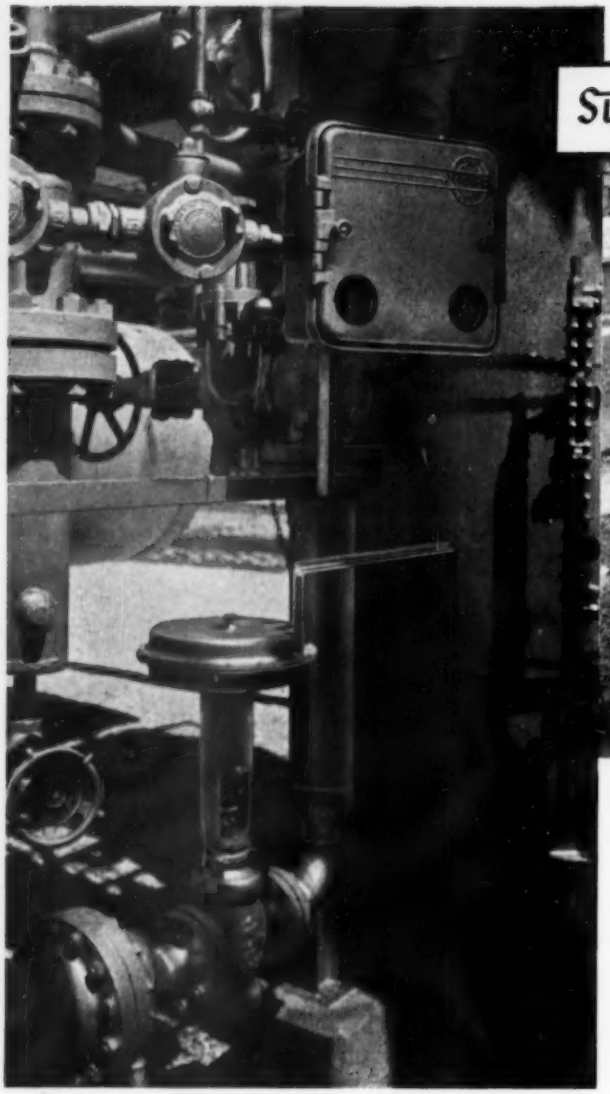
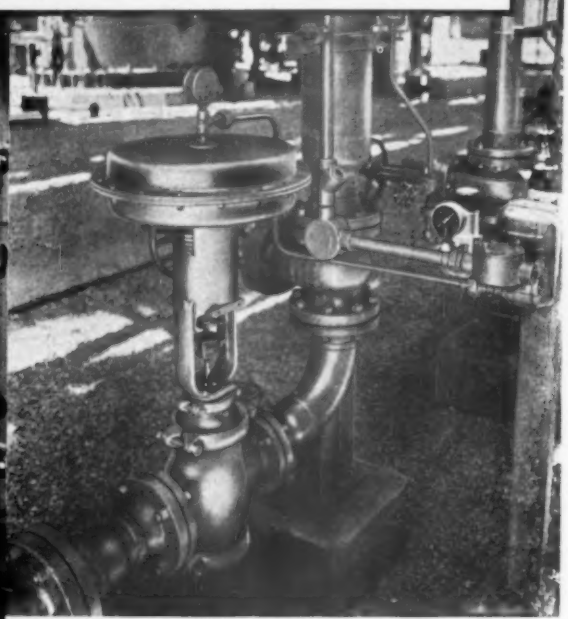


BS&B Liquid Level Control for Propane Refrigeration System

Super 70's "On Stream"



Super 70 Diaphragm Control Valve
as Debutanizer Reflux Flow Controller

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In their Mont Belvieu Fractionation Plant, Warren Petroleum Corporation separates propane, isobutane, normal butane and natural gasoline. Efficient day in, day out operation of this large plant is assisted by BS&B Super 70 Control Valves, Liquid Level Controls and Regulators.

A complete modern electronic control system was designed and installed in Mt. Belvieu for the control of precise product purity. BS&B's level controls and control valves were selected as primary and final control elements, due to their superior performance characteristics and rugged dependability.

BS&B Controls are proving their superiority in service the world over. Specify them on your next job.

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Jake Hamon: Stocks Must Be Cut

Dallas producer says the responsibility for wiser inventory management rests with the "head men who direct the policies of the 30 large companies."

Jake L. Hamon, Dallas independent producer, declared this week that the oil industry is acting "like a bunch of blithering idiots" when it comes to the matter of inventory management.

Speaking to the Houston meeting of the Texas Mid-Continent Oil & Gas Assn., Hamon asserted that refinery runs this year were "too high by 300,000 b/d" and currently are "just about 400,000 b/d too high."

Runs so far this year have averaged 8,040,000 b/d, up 7.2% from 1958. In the last week of August, refinery operating rates hit 8,362,000 b/d, the highest since December, 1956.

Hamon noted that during the past decade gasoline consumption rose by 58% but stocks jumped 125%; kerosine demand increased 7% but stocks went up 11%; distillate demand was boosted 87% but stocks increased 103%.

"In gasoline stocks . . . our record has been simply terrible and verges on the unbelievable," Hamon continued. "We started out ten years ago with too much gasoline on hand, and we have continued to put more and more of it in storage, until now, at the end of our high consuming season, we have 183-million bbl. on hand."

Hamon pointed an accusing finger at "the head men who direct the policies of the 30 large companies," declaring that the dangers arising from excessive inventories are their responsibility.

"I am addressing these remarks to the head men who direct the policies of the 30 large companies," he said bluntly. "This is your responsibility. It cannot be regarded as an industry responsibility. It is the job of top-level management in each company."

At the same time, he took a swat at "the great zeal" of "the refining people" within those companies, and said it was top management's duty to keep it within bounds.

Hamon observed that, "The refiner loves to see those unit costs go down" and can't seem to keep from utilizing excess refining capacity to do it. This, he continued, results in the movement of surplus products at distress prices.

He urged that "the matter of inventory control [be] taken away from the refining branch and put in the hands of top management."

Hamon disagreed with such producer reaction as the "silly" move for a 50 b/d minimum allowable in Oklahoma.

Reminding his audience that he is a native Oklahoman and operates in that state, Hamon said the Independent Producers & Royalty Owners Assn. of Oklahoma was "unwise" in promoting such a measure because the results could be "tragic" and could drive crude purchasers from the state.

But unless something is done to restore sanity in inventory management, he added, the same type of move probably would be made all across the Southwest.

The Dallas independent noted the current reluctance of investors to favor the oil industry, and warned that unless something is done, the domestic industry is in for lots of trouble.

But, Hamon added, "I cannot believe . . . that the top management in a great industry like ours will let us go down the drain."

The Texas Mid-Continent Oil & Gas Assn. voiced its "unqualified disapproval" of the various measures introduced in Congress to establish a so-called national fuels policy.

Calling such moves "a grave and definite threat to the future development of the nation's oil and gas resources" and a "deliberate attempt . . . to stifle competition" among fuels, the association urged congressional defeat of the proposals.

The group found that, while there are differences between domestic and foreign producers, there also are many common problems.

M. A. Wright, a director of Standard Oil Co. (N. J.), said, "Each is plagued with shut-in producing capacity; each must deal with government controls; both are subject to attacks on percentage depletion; capital requirements are high at home and abroad; and competition is severe."

Outgoing President Charles W. Alcorn hit out at the "dangerous vacuum" Texas businessmen have permitted to occur in the state's public affairs.

Alcorn said a lack of cohesive policies and actions by businessmen is promoting the causes of "a varied assortment of demagogues and opportunists to guide the tax legislation that will affect business for many years to come."

Estill S. Heyser, Jr., Dallas independent producer, was elected president to succeed Alcorn.

Heyser, 45, has served for the past two years as vice-president of the General Mid-Continent Oil & Gas Assn.

Heyser has been associated for 21 years with the oil producing firm of

NEXT WEEK in Petroleum Week

What is the latest thinking of the men responsible for equipping foreign oil operations?

This question will be answered in detail in a Petroleum Week Special Report giving the views of oil and equipment men on such subjects as:

- **Trends in oil-company purchasing of tools and supplies—including a review of the white-hot competitive battle between U.S. and foreign equipment manufacturers.**
- **Latest methods of getting materials to the plant or well site.**
- **How future operations look to drilling contractors—big buyers of drilling tools and supplies.**
- **What oil-company purchasing agents are doing to make their dollars count in buying and shipping.**

Issue date: Sept. 25.

Heyser & Heard. He was graduated from Southern Methodist University law school in 1938, and served in the Navy for 3½ years during World War II.

Newly elected district vice-presidents are: Marvin L. McCullough, Wichita Falls; H. E. Dishman, Beaumont; Alvin C. Hope, San Antonio; and C. E. Yager, Ft. Worth.

Named to new terms are Andrew M. Howsley, Albany, senior vice-president and general counsel; Charles E. Simons, Dallas, executive vice-president; and Eugene McElvaney, Dallas, treasurer.

All other district vice-presidents were reelected, and 23 new directors were named.

Oil Must Find More New Uses

The oil industry was urged this week to aid in developing new uses for petroleum and to help improve the efficiency of existing consuming devices.

The plea came from Dr. William J. Sweeney, vice-president of Esso Research & Engineering Co. and chairman of the company's committee on new petroleum uses.

He was a member of a three-man panel on how to increase demand for petroleum products, at the 57th annual meeting of the National Petroleum Assn., in Atlantic City.

Sweeney described the work Esso is doing to develop new uses, ranging from the application of an asphalt film to stimulate the growth of grass in arid areas to looking for a method to keep the St. Lawrence Seaway from freezing up in the winter.

The latter project, which he described as a "blue sky" idea, might be feasible, he predicted, by pumping warm water that lies deep in the channel up to the colder surface layers by air from compressors powered by petroleum products.

He said the company abandoned work on an idea to use oil to heat the St. Lawrence Seaway water as too expensive.

"We should depend more on ourselves than we have in the past to find new uses for oil," Sweeney commented. The industry's markets in the past have been "handed to us" by inventors of oil-consuming devices, he added.

Existing devices must be improved in efficiency, he noted, so they can stand up against the competition of devices that use other forms of energy to do the same job for the customers.

In Washington—

New Fact Program for Oil

The Mid-Continent Oil & Gas Assn. is stepping out in Washington with a comprehensive public-affairs program—which is something everybody agrees is long overdue in the capital.

Its objective is to become petroleum's principal source of information on economics, statistics, and general data. It plans to represent "all of the oil-producing states east of the Rockies."

In time, its facilities may include statisticians, economists, writers, and other public relations personnel. Currently, it has two people in Washington—an attorney and a secretary.

The program is scheduled to start next January, with Joe T. Dickerson taking over in Washington in the newly created role of executive vice-president.

Dickerson's appointment was announced last week by William J. Goldston, Mid-Continent president. He is to retire in December as president of Shell Pipeline Corp.

Dickerson's main office will be in Washington, but he will also supervise the association headquarters in Tulsa.

His principal activities will be to direct the assembling and coordination of factual material about oil and gas—and to "make such material available to congressmen and their staffs, government offices, editors, columnists, commentators, and reporters."

His office also will attempt to answer any and all queries about the industry's complex operations, as well as to give broad attention to basic industry problems.

The need for such an office in the nation's capital has long been felt among editors, writers, and others concerned with oil's problems and characteristics.

Many companies and associations have representatives and trained press relations personnel there now, but their operations are limited to their own special interests.

A few have functioned in the general industry area, simply as a good will gesture and service. But there has been a void for a long time for a single, comprehensive source.

Dickerson looks on his assignment as an "industry move . . . to provide the capital press corps and others with much-needed information."

Says the new vice-president:

"We are now taking a step which will give the industry a better, more complete, more positive representation in Washington.

"It will provide the information that the industry needs to have available to Congress, the departments of the government, and the press."

Plans are somewhat vague at present, but Dickerson says he can see no reason why the oil industry isn't as well represented in Washington as the National Coal Assn.

The association's over-all budget hasn't been blueprinted yet, but it is expected to be increased materially to support the Washington program.

Mid-Continent has 9,000 members and five divisions in eight states. Under the new plan, Clarel Mapes, secretary-treasurer, and Claude Wild, Washington attorney, will continue their present activities.

Meantime, Gulf Oil Corp. moved ahead on its Washington program with appointment of a public relations representative.

This will be Henry La Cossitt, former editor and writer, who has been a Centennial consultant with the American Petroleum Institute.

Continental Oil Co. has added a man, too. He is Basil R. Littin, who resigned from Hill & Knowlton to become Conoco's associate director of public affairs in Washington.

Utilities Plan New Coal Pipeline

Four eastern utilities are discussing the potentialities of a 24-in. pipeline to supply themselves with coal from West Virginia and western Pennsylvania fields.

It's all in the talking stage presently, but participants include Consolidation Coal Co., of Pittsburgh, and Texas Eastern Transmission Corp. The latter would build and operate the proposed slurry line.

The utilities are Consolidated Edison Co. of New York, Public Service Electric & Gas Co. of New Jersey, Pennsylvania Power & Light Co., of Allentown, Pa., and Philadelphia Electric Co.

Consolidation has been operating a 135-mi. coal pipeline from Cadiz, Ohio, to Cleveland for more than a year. Shipping costs are substantially lower than by railroad, it says.

The 1960 Cars—Some Thumbnail Facts:

Anticipated sales—
Small cars: around 2-million, including imports; big cars: around 5-million.

Compression ratio averages—
Small cars: 8.5-1; big cars: 9.1-1 (about the same as in 1959).

Mileage expectations—
Small cars: 25-30 mpg.; big cars: no change, depending upon accessories.

Gasoline requirements
Small cars: regular grade; big cars: same as in '59, with cheaper models stressing regular grade.

Oil change specifications—
Small cars: 4,000 to 5,000 mi.; big cars: 3,000 to 5,000 mi.

Gasoline demand—
Up somewhat from 1959's anticipated 63-billion gal., but it's anybody's guess.

Small Cars Win Popularity Poll

Big car sales will continue to dominate the market in 1960. But small-car talk and purchases will provide all the color and excitement.

That's the way the automobile picture looked this week as leading manufacturers unveiled their newest entries in the perennial scramble for consumer dollars and prestige.

It's generally anticipated that 1960 is going to be another good year for automobile manufacturers, continuing the trend that blossomed so well in 1959.

Production forecasts vary materially, but the feeling is that total sales, including imports, will run around 7-million units.

That wouldn't endanger 1955's all-time peak of 7.9-million passenger cars, but it will keep car makers busy and happy.

And, coupled with the 1959 business, it will make them more cheerful than last year, when total sales barely exceeded the number of old cars that were junked.

The three new U.S.-made small cars —Chevrolet's Corvair, Ford's Falcon, and Chrysler's Valiant—are expected to rack up sales of about a million. And total sales of small cars, including imports, will be around 2-million.

The new small cars will pose no special problems for petroleum. The makers have studiously avoided any unusual fuel, lubrication, or service requirements.

Tires, plugs, and belts are excluded from this generalization, of course, and dealers will have to stock two sizes of special 13-in., low-profile tires. This is particularly true for the Corvair, where such a tire is critical for proper handling.

Compression ratios, which average 8.5-1, are considered within the range of regular gasoline.

Mileage will be good, with the expectancy that a skilled driver can average 16 to 18 mi. per gal. in the city, and 25 mi. per gal. and better in the country. Cruising ranges will vary, since tank capacities run from 11 to 20 gal.

The Big Three's small cars are all new mechanically. All three engines are new from rocker arm cover to oil pan.

Corvair is the most radical, with its horizontally opposed, air-cooled, all-aluminum unit mounted in the rear.

The Valiant and the Falcon engines are straight-forward designs, although Valiant's will tilt about 30 degrees to clear the low hood.

Service problems won't be difficult. Access to the engines is easy, and windshields are sensibly sized. Thus, service station attendants won't need extensions on their arms to wipe windshields or penetrate the cars' innards.

Also a factor in the small-car market will be American Motors' Rambler.

President George Romney, the father of the small-car trend, is firmly convinced that his Ramblers will hold their own in the market.

He figures he'll turn out 400,000 cars in the current year, and top that figure by 100,000 in the 1960 design.

Romney is outspokenly optimistic about small cars. He predicts that by 1965, small car sales will be about 60% of the market and will account for about 25% of the cars on the road.

His new model has been given a substantial face-lifting, but the over-all statistics are about the same.

The big cars have grown bigger but not by the leaps and bounds of recent years.

And additional hundreds of millions of dollars have been poured into continuing the radical styling and structural changes of recent years.

Compression ratios, which averaged 9.14-1 in 1959, have actually dropped slightly but not significantly.

The "mix" of optional engines available has decreased, mostly at the expense of the big, gas-consuming V-8's formerly offered at extra cost by the "low-priced three."

Makers who stuck with six-cylinder options during the horsepower race of recent years are in good shape and happy. Use of these lighter engines climbed dramatically in 1959, and further increases in popularity are expected.

In this area falls the only really new engine to be offered by a standard-sized car for 1960. The Plymouth and Dodge 118-in. wheelbase Dart will feature a slightly bored-out version of the inclined Valiant Six engine for economy-minded buyers.

Chrysler Corp. is continuing its two basic V-8 engines. When the smaller one is equipped with optional four-barrel carburetor and a higher compression ratio, it requires premium fuel. The new Chrysler Corp. unitized bodies are structurally interchangeable on all Chrysler makes except the Imperial.

Engines in General Motors' cars remain fundamentally the same, with Chevrolet being the only one to continue fuel injection. The Hydramatic transmission has been redesigned in more compact form.

GM has retained the same cowl and roof structure for 1960, thus creating an unusual interchangeability of Chevrolet and Cadillac windshields.

Ford has restyled its Ford, Edsel, and Mercury lines, but it didn't tinker much with the chassis or engine designs. One intermediate V-8 has been dropped. The cheaper cars stress the economic advantages of regular gasoline.

The six is continued in both Ford and Edsel, and the volume is expected to increase beyond this year's 24% of output.

Lube recommendations are unchanged with the 4,000-mi. oil change and no rear axle drain.

PETROLEUM COMMENTS / By Wanda M. Jablonski

Jersey's New Look Is to Be Global

Big things are going on in the world's biggest oil company—and on a global basis.

At present, Standard Oil of New Jersey's worldwide operation consists of a sprawling network of so many hundreds of companies that it almost takes a Univac to keep track of them all.

Within a few years, however, the Jersey operation will have been streamlined into a much smaller number of bigger, regional organizations.

* * * *

The newly announced merger of Jersey's main U.S. operating affiliates into one big national company is one big consolidation move.

But what is not generally realized is that it is merely one in a series of similar steps around the world.

And it's the third step, not the first, in the Jersey consolidation program.

* * * *

The first was kicked off about five years ago when a bunch of Jersey affiliates in the Caribbean were merged into a new unit, Essosa (Esso Standard Oil Co. Societa Anonima), headquartered in Havana, Cuba.

This regional company has been steadily expanded until it has now taken over all Jersey operations—marketing, refining, exploration, and production—in more than 26 countries, colonies, and territories throughout Central America and the Caribbean.

The second step was taken six months ago with the formation of Esso Mediterranean, headquartered in Geneva, Switzerland.

This unit is taking over Jersey affiliates in the countries bordering on the western, southern, and eastern shores of the Mediterranean—including Portugal, Spain, Morocco, Tunisia, Algeria, Libya, Egypt, and Lebanon. For the time being, the merger applies only to marketing and refining functions, with exploration and production omitted to avoid complications on concession terms in the various countries.

* * * *

Several other similar moves of regional consolidation in different parts of the world are now in the works, according to Jersey's president, Jack Rathbone. The new ones, however, are not yet ready for announcement.

Generally speaking, Rathbone explains, the basic goal is to end up with the smallest possible number of operating companies consistent with efficiency and political realities. Consolidation is generally planned for areas complementary to one another, either geographically or functionally, or both. For instance, the Caribbean-Central American area formed one region in terms of supply, so that the merger automatically greatly simplified coordination of distribution. The same is true in the Mediterranean area.

Rathbone points out that such mergers not only will greatly improve efficiency and economy by reducing overlapping functions and streamlining staff, but—even more important—will result in more effective competition through unified policy and management.

* * * *

The latter should certainly prove true in the U.S., where it's long been a truism in the industry that Jersey's main affiliates—Humble, Esso, and Carter—have been operating more like individual competitors than members of the same family team.

Certainly, the regional viewpoints and attitudes of the three main affiliates to be merged can now be expected to be considerably broadened.

For instance, Humble's Texas organization may now start regarding Esso Standard's vast eastern and southeastern marketing network as "our" marketing arm—and a great asset at that. Conversely, the Esso refining and marketing organization will now face the novel idea that Humble's huge crude reserves are "our" crude supply—and something worth pushing in markets.

During the initial stage, the three companies will continue to operate as separate divisions of the new national domestic company—each with its own "board of management" and its own sales brand.

But this clearly is only an interim stage—designed to maintain maximum morale and existing executive titles until the new over-all organization can be built up.

Part of the plan, too, is to strengthen the new national company with a nationwide brand. Jersey has never had a national brand in the U.S. because of a court injunction in the 1930s barring its use of "Esso" in any areas where the name of "Standard Oil" belongs to another company.

Rathbone has made it clear, however, that Jersey doesn't consider either "Humble" or "Carter" to be the most effective national brand. Also, Jersey doesn't intend to give up the "Esso" name in any domestic area where it is established—particularly now that all of its international operations have been tied into the Esso name.

Thus, unless a new legal basis can be found for use of "Esso" nationally, it's a good bet that the Esso brand will be continued wherever it now exists or can be expanded, and some national symbol tied in with it throughout the remaining U.S. markets.

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for more than a quarter century"

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Concentration on the needs and requirements of the oil producer — careful, expert attention to the demands of modern production financing — these are reasons why Republic is a leading oil bank of the South — with the South's largest Oil Department. How may we serve you?

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MEMBER
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What's New / IN THE INDUSTRY

Cities Service Co. this week urged the industry to cut runs 3.6% for the rest of 1959. This, according to Burl S. Watson, chairman, would correct the present top-heavy inventory situation. Cities Service itself cut refinery runs for the last four months of 1959 by 5% under the corresponding period of 1958, and 3% under the first eight months of this year. Watson says the over supply situation can be corrected only by bringing production into line with current demand.

•

Pennsylvania crude prices were raised 15¢ a bbl. this week to a top of $4.40. Joseph Seep Purchasing Agency of South Penn Oil Co. said the move was prompted by "continued strong demand."

•

A big boost in the flow of natural gas between the U. S. and Canada was predicted last week in a new energy study. The report, released by the National Planning Assn. in the U. S. and the Private Planning Assn. of Canada, says "economic forces . . . point in the direction of a continental system of producing and marketing" natural gas—even though large-scale movement between the two countries is slowed by government regulation. The study also notes that "natural gas today supplies about one-quarter of the total energy needs of the two countries. By 1970, it may provide as much as one-third of their requirements for fuel and power."

•

Refining and marketing in Britain are the latest target for Italy's state-owned ENI. Enrico Mattei, president of the expanding company is looking for capital in London for part of the cost of a refinery and chain of service stations. Following talks with London banks, he said a market survey would be started immediately.

•

United Producing Co. is paying more than $4¾-million to enter West Texas as a producer. The United Carbon Co. subsidiary is buying oil and gas properties, along with a considerable amount of undeveloped leases, in four West Texas counties from former stockholders of Brinson-Collins Oil Co. The latter Midland company was dissolved several months ago, and its assets distributed to stockholders. Included in the sale are 66½ net oil wells and 12 separate leases totaling 2,700 acres.

•

Nov. 6 has been set as the date of the next pretrial conference in the Justice Dept.'s antitrust suit against 29 oil companies. Trial of the companies, charged with conspiracy to fix crude and product process during the Suez crisis, will begin in the U. S. District Court in Tulsa on Jan. 18. The Justice Dept. has until Dec. 15 to submit a pretrial brief, and the defendants will have until Jan. 11 to file their replies.

•

Frontier Refining Co., of Denver, is offering to buy Western States Refining Co. for $5-million. Western is the only independent in the Salt Lake City Refining district, with a 7,500 b/d plant. It also has a 2,000 b/d refinery in Farmington, N. M. If the acquisition goes through, Frontier would start marketing in three new states—Nevada, Arizona, and New Mexico. Western has 165 controlled outlets in Utah, Idaho, Nevada, Colorado, Arizona, and New Mexico.

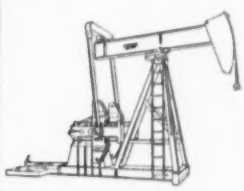
STRONGEST in the saddle

The Alten pumping unit's bronze bushed saddle bearing is really three sturdy bearings in one. Since only the bottom of the bearing wears, a 120-degree rotation gives you an entirely new bearing surface. You get 200% longer bearing life. And the bronze bearing withstands shock loads best.

The Alten saddle operates with an absolute minimum of parts. It provides for continuous bearing lubrication. It is "oversize" to stand up under the heaviest use and worst abuse.

The Alten saddle also permits easy adjustment of the walking beam to and from the well for centering the polished rod hanger. And it allows convenient lateral adjustment of the walking beam to compensate for minor errors made at the time of installation.

This is the kind of practical engineering built into every part of every Alten pumping unit. Isn't this the way you want your pumping equipment built? Wouldn't it be a good idea for you to call your Alten dealer?



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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
September 18, 1959

Activity is increasing at the Federal Power Commission. With Congress out of town after a long session, and with the oil imports situation relatively static, FPC once again becomes the focal point of industry activity in Washington. And more importantly, the commission has some major cases pending.

•

First, watch the oral arguments in the Phillips rate case. The arguments will start Oct. 1. Normally, this final debate is limited to one day —but the Phillips case will require two or more. The arguments will be made before all five commissioners. You can expect a schedule of arguments to be issued about four or five days before they start.

The Phillips case is sure to set more precedents in producer price regulation. FPC members will weigh the arguments of producers, transmission firms, distributors, and the commission staff in the light of the lengthy recommendations of Examiner Joseph Zwerdling. Zwerdling wants uniform prices for the entire Phillips system, based on cost of service. But producers—especially smaller ones—contend this pricing technique will be unworkable. Within the category of costs, there also is sharp disagreement on how to calculate expenses, particularly tax items.

FPC won't issue any early ruling on Phillips. Most guesses are for early 1960, or late this year at best. The case is complex, the issues many, the participants numerous. After the commission's ruling, court appeals are a certainty.

•

Other pending cases before FPC involve Canadian gas—an increasingly big factor in U. S. supply. Examiner hearings are expected to continue for several more weeks on Midwestern Gas Transmission Co.'s plans to transport Canadian gas to midwestern states. FPC is expected to approve the project, but not so quickly as Midwestern and its parent, Tennessee Gas Transmission, had hoped. Canadian gas to California markets, sought by Pacific Gas & Electric Co., will be another case to watch in the weeks ahead.

•

Two recent FPC decisions may wind up in court soon. Transwestern Pipeline Co., seeking permission to build a Texas-to-California line, is trying for a rehearing after FPC ordered lower producer prices. El Paso Natural Gas Co. doesn't like the method used by FPC in approving a rate schedule lower than it had requested, and may go to court with an appeal on FPC's mathematics. And El Paso's customers—Southern California Gas Co. and Southern Counties Gas Co.—are appealing for a rehearing of the rate increase granted El Paso. They say they will also seek "protection" for their customers.

•

Congress's extended session pushes back the upcoming depletion hearings by three weeks. The House Ways & Means Committee now will start its general tax hearings Nov. 16, with depletion testimony scheduled for Dec. 1.

•

Disputes over indefinite pricing clauses will draw further FPC attention. In the months ahead, the commission will take a detailed look at the effect of such clauses—particularly the favored-nation clause.

Meet Ethyl's Gil Way

Gil Way is a Research Representative in the Western Region —one of the experienced engineers who serve regularly as liaison between Ethyl's Research Laboratories and the Petroleum Industry.

Gil has been in this business of fuels and engines for 32 years, and has seen and handled virtually every technical problem in the book. Perhaps no man in the world has had more experience in vehicular vapor lock testing. Gil has been leader of the C.R.C. Vapor Lock Panel for the past 12 years, and is also Meetings Vice Chairman of the SAE Fuels and Lubricants Activity.

More specifically, Gil's full-time job and that of his counterparts is to *bring to* oil company technical people results of Ethyl's Research programs plus information on new developments in the Automotive Industry; also to *bring back* Petroleum Industry thinking on fuel-engine relationships.

1. One major service Gil performs is presenting technical information to oil company research people. Here he is discussing a report on Ethyl's new Manganese Antiknock Compound, showing this compound's ability to provide high-level octane numbers at relatively low cost.

2. Dealing with hot fuel handling problems is one of Way's specialties. Here, he explains to a visiting refiner how this special apparatus at the San Bernardino Research Laboratory measures the vapor-to-liquid ratio of gasolines at various temperatures.

3. This oil company research group is listening to an Ethyl-produced tape of the sound of Rumble in V-8 engines. Gil will follow this with a technical discussion of the current Ethyl work on this latest problem arising from surface ignition in high compression engines.

4. To give a customer a specific check on the effectiveness of Ethyl's phosphorus additives in his fuels, Gil set up a cooperative test program at Ethyl's Research Laboratory. His report will show how these additives reduce surface ignition and combat spark plug fouling problems.

Ethyl's Research Representatives work with oil companies everywhere . . . typifying Ethyl's belief that service is just as important as product.

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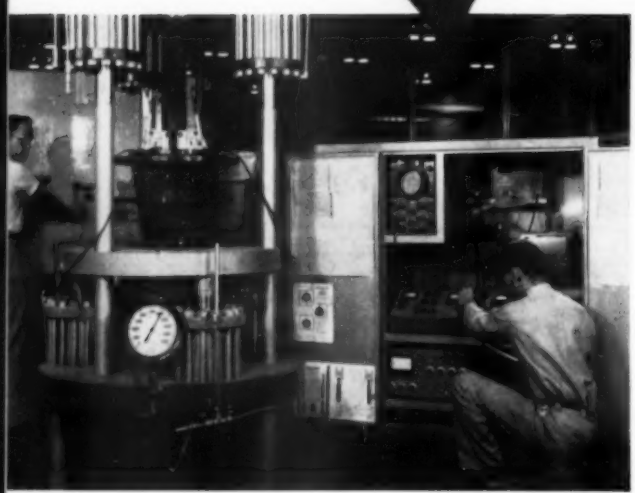

Mission Slips in 600,000 lbs. capacity slip test machine, with fourteen channel recording oscillograph measuring strains in slips and pipe.

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Mission Rolling Dog teeth grip the hardest pipe available today with minimum stress concentration. New positive lock retains dogs in place. The standard rolling dogs and new solid inserts let these slips do the job of the heavyweights. You will find all the proved and popular Mission slip features: Segments are self-leveling as insurance against crimping the pipe. Top of slips is constructed to allow heavy elevator blows to be absorbed. Renewable hinge pins on these Lightweight Slips mean long life, less replacement. Flexible handles bend instead of break.

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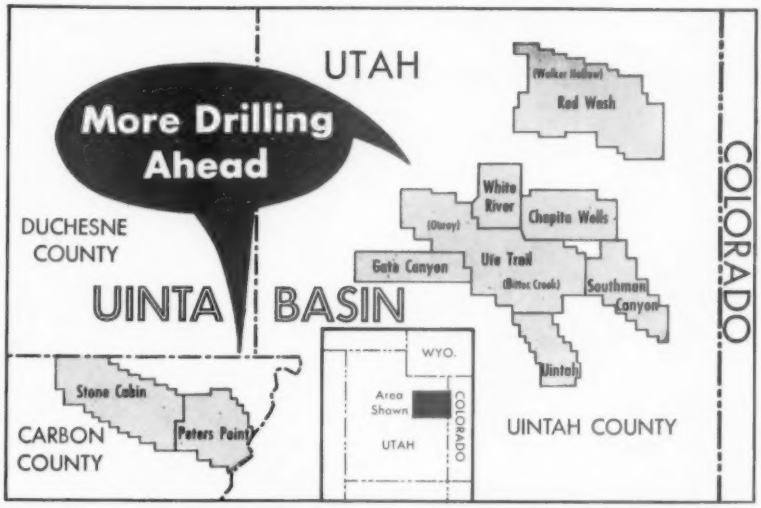


SEVERAL UNITS in the Uinta Basin are focal points for stepped-up drilling as . . .

Utah Gas Hunt Grows

Look for the gas search in the Tertiary formations of Utah's Uinta Basin to gain strength within the next year, after nearly a decade of thin encouragement.

Puzzling geology and relatively small and isolated discoveries—among other factors—have contributed to the start-and-stop development history since operators moved into the area following World War II.

Farmouts have been common, and, in some cases, just enough drilling has been done to satisfy requirements imposed on public-domain operators by the U.S. Geological Survey.

Belief that the potential payout could be one of the biggest in western natural gas history has led operators to continue to finance drilling—with their eyes on the prime gas market in California.

The biggest force behind the new surge is the competition among transmission companies to move gas into California.

Standard Oil Co. of California and its subsidiary, Western Operations, Inc., are currently negotiating with Pacific Northwest Pipeline Corp. for the sale of gas from the Red Wash oil and gas producing area.

Standard and Pacific—a subsidiary of El Paso Natural Gas—are talking of a minimum sale of 10-million cf/d.

This gas would be the excess produced in the field and not needed for reinjection as part of Standard's repressurization program.

Standard has several shut-in gas wells on the east and southeast part of the field. The company says it also has numerous locations for added gas wells.

PETROLEUM WEEK was told that Standard could deliver up to 35-million cf/d within about a year.

Pacific currently has a line running through the extreme eastern part of the basin, in Colorado.

And a major transmission line is planned by El Paso and Colorado Interstate Gas Co. which would run south from Rock Springs, Wyo., through the extreme western edge of the basin to the California-Nevada border southwest of Las Vegas (PW—Aug.8'58,p16).

The existing line and the plans for the others have helped stimulate leasing interest.

All of the area extending west from the Utah-Colorado border to the Wasatch Plateau where it touches Duchesne, Carbon, and Emery Counties is under lease.

The production history at Wyoming's Hiawatha and Powder Wash fields, near the Colorado line, also lends spirit to prospecting in the Uinta Basin.

Mountain Fuel Supply Co., Salt Lake City, has been producing from these Tertiary fields for four to five years, and says they are among the best in the company's system.

The reservoir is composed largely of lenticular interfingerings of sand sections.

"It is impossible to pinpoint the reserves upon completion," says an MFS official. "But on the average, the estimate of 2-billion cu. ft. per 640 acres has withstood the test of delivery and pressure charts prepared by our engineers over the past four years."

De Kalb Agricultural Assn. and Sun Oil Co. are given the principal credit for the new optimistic view toward basin gas reserves.

De Kalb, an Illinois independent, got into the act by buying the interests of Havenstrite Oil Corp.

Sun had pioneered in the gas discovery at the old South Ouray Unit, and Havenstrite joined the Bitter Creek area with the Ouray to form the 65,000-acre Ute Trail Unit.

De Kalb recently completed No. 3 Ute Trail, section 16-10s-22e, Uintah County, Utah, in the Bitter Creek area, for 23.5-million cf/d from 4,832-50 ft. in the Wasatch (Eocene).

In drilling the hole, natural gas was used as the circulating medium. The formation was fractured using a mixture of 26,000 gal. of diesel oil and 2,300 lb. of sand followed by 1,500 lb. of ADOMITE.

This well is 1 mi. south of Havenstrite No. 83X-9H Ute Trail, which produced 36-million cf/d after fracturing.

It helps soothe the disappointment of a hole drilled 1 mi. west of No. 83X-9H, in which the producing segment of the Wasatch formation was never found.

De Kalb currently is completing three wildcats and is still drilling in a fourth. All four have had gas shows in the Wasatch and the Mesaverde (Cretaceous), although the latter formation has not lived up to expectations to date.

These tests are located in the general discovery area at South Ouray (9s-20e) or Bitter Creek (10s-22e).

De Kalb No. 5 Ute Trail, section 23-9s-20e, flowed 510,000 cf/d from the Wasatch, before the formation was fractured.

But more important, say observers, it also flowed an estimated 1-million cf/d from an oolitic limestone segment of the Green River (Eocene) formation at 3,300 ft., before fracturing.

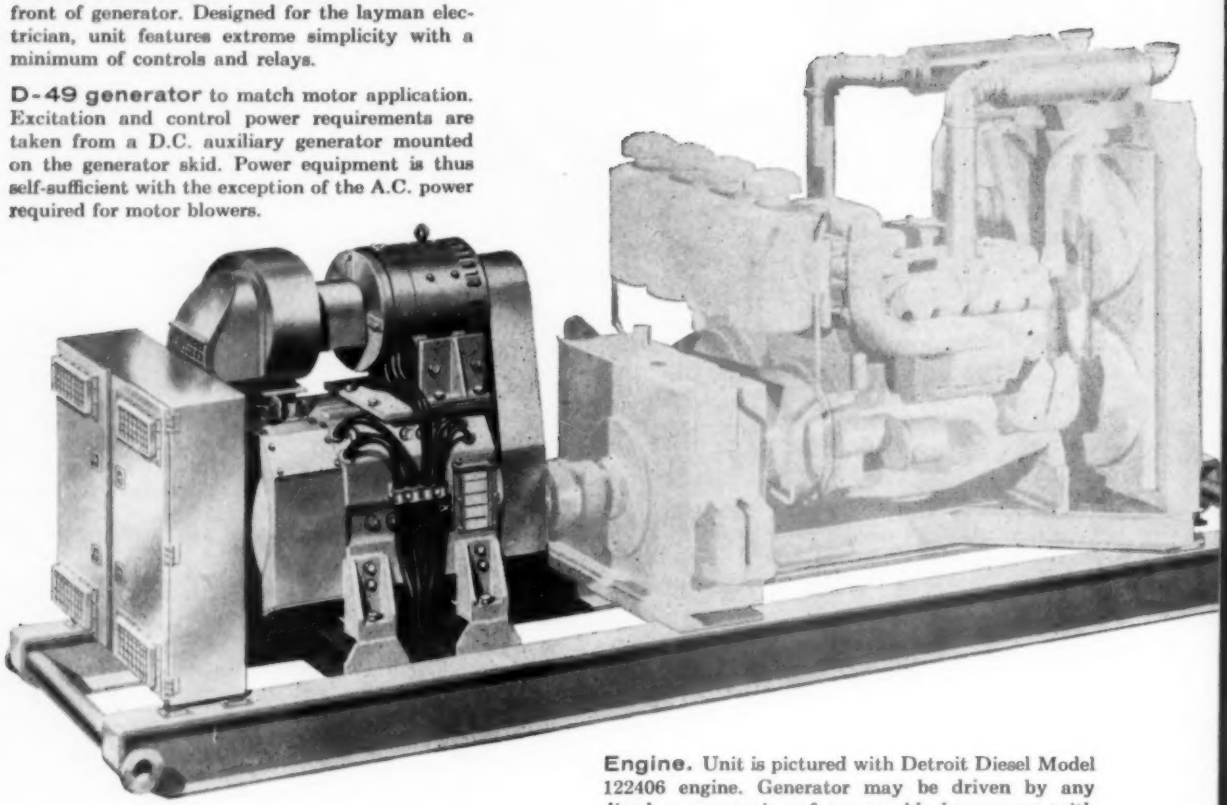
De Kalb has scheduled development drilling on a 640-acre basis at Ouray and Bitter Creek with the aim of establishing reserves sufficient to satisfy transmission company engineers.

The company also plans to drill a wildcat between Ouray and Bitter

NEW ECONOMY FOR

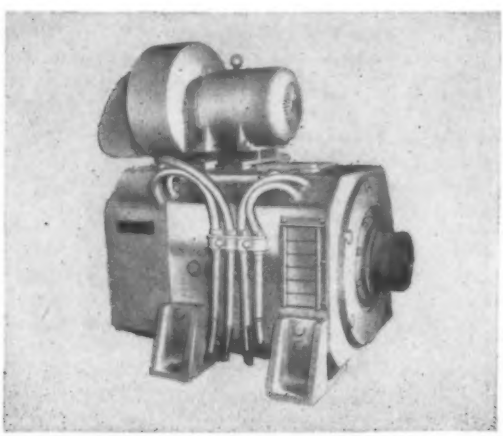
Motor control cabinet is mounted on skid in front of generator. Designed for the layman electrician, unit features extreme simplicity with a minimum of controls and relays.

D-49 generator to match motor application. Excitation and control power requirements are taken from a D.C. auxiliary generator mounted on the generator skid. Power equipment is thus self-sufficient with the exception of the A.C. power required for motor blowers.



Engine. Unit is pictured with Detroit Diesel Model 122406 engine. Generator may be driven by any diesel or gas engine of comparable horsepower with a shaft speed of 1200 RPM.

Driller's control. Control panel can be located most convenient to total operation. Panel is simple, easy-to-operate. Driller has complete control of drawworks, rotary and mud pumps from one location.



Drive motors. Electro-Motive D-49M direct current drive motors capable of 700 hp. Motors provide smooth and rapid acceleration of loads with positive control of speed and torque.

MEDIUM-DEPTH DRILLING

Announcing the Electro-Motive SR-5 Diesel-electric Power Unit

Electro-Motive pioneered development of integrated Diesel-electric power for deep well drilling. The tested dependability of this larger equipment has been retained in the design of this new unit for medium-depth drilling. In addition, the SR-5 features many special cost-saving advantages.

Simplified design

Unit is set up or taken down with simple electrical connections. No special instructions or electrical knowledge required. Controls are easy-to-learn, accurate and provide complete power flexibility. Generator and drive motors are standardized, permitting parts interchange. Maintenance is extremely low.

Fast rig-up and moving

Skid-mounted components are easily portable, save on moving time and costs. Flexible electrical cables speed set-up and take-down time—permit components to be arranged to suit location. No time-consuming alignment required.

Power where needed

The SR-5 provides complete flexible control. Through its simple control panel, power is apportioned to match the changing demands of each operation. Thus, the driller can balance operations according to conditions, maintain a high drilling rate.

Adaptable

A number of arrangements are available to suit the needs of varying applications. Basic set is a two generator, two drive-motor unit. With addition of another generator skid and two drive motors, unit can drill in excess of 12,000 feet, or, as limited by engine horsepower. Controls are also designed for this expansion.

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Creek. Hopes are held high for this test as a result of both Green River and Wasatch stratigraphy studies based on logs of holes now in the completion stage.

Other operators active in the basin include Texaco Inc., El Paso Natural Gas Co., Gulf Oil Corp., Standard Oil Co. of California, Petain Corp., Alamo Corp., and Belco Petroleum Co.

Texaco is drilling the first of two scheduled tests in the Uintah Unit, immediately south of the Bitter Creek segment of the Ute Trail Unit.

At last report, its No. 1 Uintah Unit, section 16-10s-21e, was below 2,000 ft.

In the White River Unit, to the northeast of the Ute Trail Unit, an Alamo Corp. test flowed 150,000 cf/d from the Middle Wasatch.

Mountain Fuel Supply has scheduled four wildcats to test through the Green River to the Mesaverde during the next two years in its 70,000-acre Gate Canyon area.

This acreage—which probably will be divided into four separate units—runs in a direct strip west from the south portion of the Ouray segment of the Ute Trail Unit.

Farther south in Uintah County, Belco has taken a farmout from Continental Oil Co. at Chapita Wells, where gas-condensate has been discovered in the Mesaverde, and gas is being produced from the Wasatch.

Belco has reported significant gas shows at its No. 5 Unit, section 22-9s-22e.

El Paso will drill in 1960 at Southman Canyon, Uintah County, where gas was discovered in the Wasatch last year.

The company's Peters Point Unit, section 12-13s-12e, in Carbon and Duchesne Counties, also has yielded Tertiary gas. No early drilling is committed, however.

Petain Corp. has had gas shows in a wildcat at Stone Cabin, where earlier shows in the Wasatch encouraged the company to sink its current test. Stone Cabin Unit is in eastern Carbon County.

Development of Green River sand pays in fields within the basin also is expected to push gas reserves toward pipeline requirements.

The completion of gas-injection facilities at Red Wash field, eastern Uintah County, is expected to make possible the sale of 10-million to 15-million cf/d of "excess" gas from wells in the Green River sand section.

And development of other Green River sandstone fields—the Wonsite Unit (Gulf Oil), Uintah County, and Starr Flat (Stancal) and Choke Cherry Canyon (Gulf Oil), both in Duchesne County, are expected to add to gas production.

Development of the Uinta Basin as a gas province has been slowed in the past by persistent belief in negative factors:

- There used to be a belief that the basin held a fresh water rather than a marine (saline) sediment, and therefore could not produce oil or gas. One current theory is that "the oil occurrences are exceptional in that the oil probably originated in freshwater beds."
- There was a general reluctance to drill the Teritiary as a major oil or gas prospect because the formations were "too young." It had to compete with the Cretaceous, which was the favorite target.
- The main objective in the basin was oil. And when gas shows testing from 200,000 to 2-million cf/d were found, they were judged "uneconomic," since they were not comparable to wells indicating from 10-million to 50-million cf/d found elsewhere in the Rocky Mountain area, or in the Mid-Continent, the home grounds of many of the operators moving into the basin after World War II.
- There was a general absence of surface structures, and even of subsurface structures determinable by seismic work.
- There were no pipelines already in the area.
- Gas shows found by operators looking for oil were in lenticular sections. And dry holes drilled half a mile away "proved" the reservoir was small, and that, therefore, no major development could be expected.
- The basin had to compete with gas developments elsewhere in the Rocky Mountain area—particularly in Wyoming's Green River Basin and New Mexico's San Juan Basin.

But now, observers say, many of these attitudes no longer exist, in view of recent developments.

They point to the increasing evidence that substantial gas reserves can be found, and to the California Standard-Pacific Northwest gas-sale negotiations.

The Red Wash contract, they add, would provide the basic amount of gas necessary to get a pipeline built into the basin capable of an initial transmission of between 80-million and 100-million cf/d.

This, they believe, would serve to boom wildcat drilling and gas field development throughout the Uinta Basin.

Mississippi Has Bright Outlook

Drilling activity in Mississippi is expected to reach a new high this year, according to Morgan J. Davis, president of Humble Oil & Refining Co.

It is estimated that 605 holes will be drilled in Mississippi this year, Davis told the Mississippi-Alabama division of the Mid-Continent Oil & Gas Assn. last week.

The previous high, he said, was in 1955 when 488 holes were drilled.

Since Mississippi's first oil well was completed in 1939, Davis added, nearly 7,000 holes have been drilled. At the end of May, 1959, the state had 2,578 producers in 156 fields. Its proved reserves were approximately 450-million bbl. of oil and 2.5-trillion cu. ft. of natural gas.

Mississippi can look forward, Davis said, to a high level of activity for some time to come.

He said the state is beginning to attract more and more operators because of the favorable allowables, the improvement in the discovery rate, and the impact of Little Creek field.

Mississippi allowables are based on the MER for wells up to 10,000 ft. Deeper wells are unrestricted unless field rules are established by the state.

"The next several years will probably see increases both in exploratory activities, such as leasing, geophysical work, and wildcat drilling, and in production activities, such as development drilling and daily production rates," Davis added.

"Mississippi," he said, "is an excellent example of the contribution that petroleum can make to the economy of an area.

"If we include the state tax on gasoline, the industry and its products are now generating almost 35% of Mississippi's tax revenues."

He pointed out that when the state's first well was completed, Mississippi was running last, or close to last, in most economic areas.

"The availability of low-cost hydrocarbon fuels has provided a strong inducement for industrialization," he said, thus resulting in a broadened economy.

Davis said the substantial investments made by the petroleum industry have had a marked effect on the state's economic renaissance, although neither oil nor any other single factor can be said to be solely responsible.

IR cargo pumps serve new ultra-modern tankers

...the ships

Built by Newport News Shipbuilding and Dry Dock Company, these four new ultra-modern tankers will have the most powerful single-screw turbines ever installed . . . 26,500 hp, sustained speed of 18.3 knots in normal service, with a load capacity of 13,356,000 gallons.

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...the cargo pumps

Ingersoll-Rand Class HLV cargo pumps on these new tankers are rated at 6000 gpm, 150 psi. Liberal suction design, with low suction head requirements permits maximum pump-out under low submergences. This contributes to high speed cargo discharge, helps cut turnaround time. To minimize radial thrust, the dual volute casing has two cut waters instead of the standard one furnished on most pumps of this type . . . especially important when handling high viscosity liquids.

Ingersoll-Rand Class HLV cargo pump

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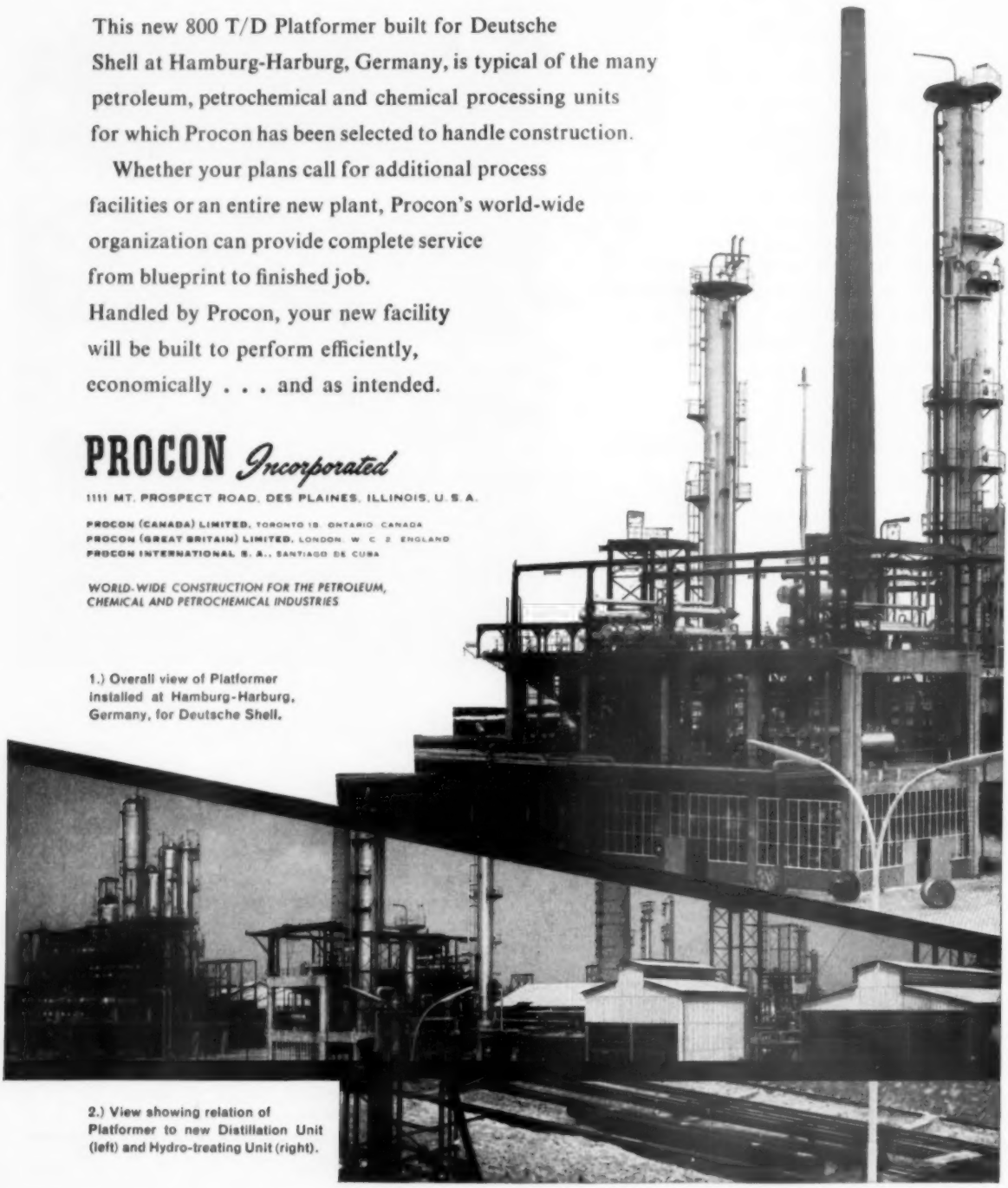
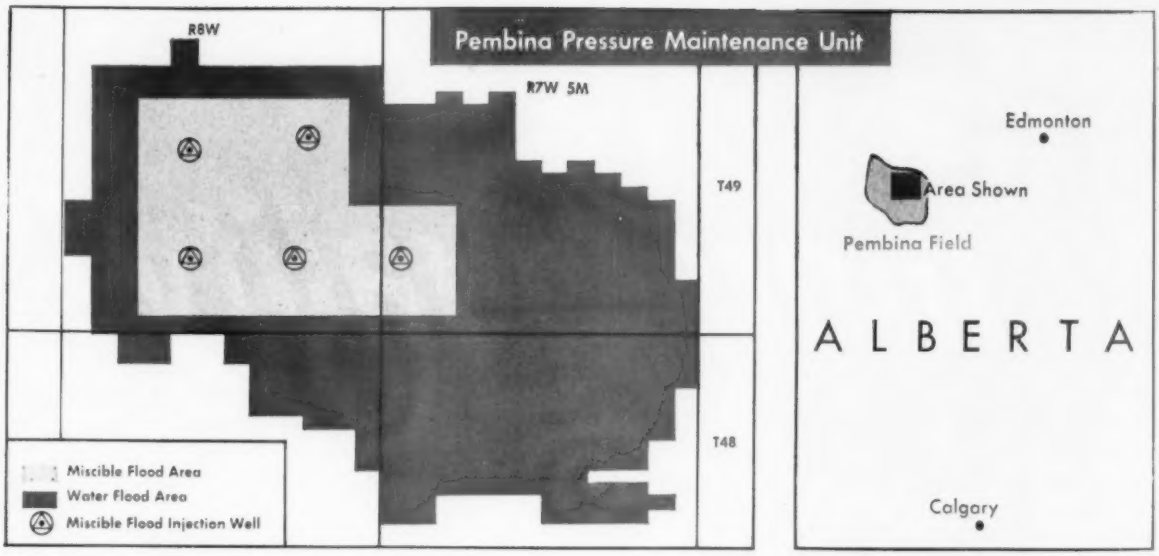


1.) Overall view of Platformer installed at Hamburg-Harburg, Germany, for Deutsche Shell.

2.) View showing relation of Platformer to new Distillation Unit (left) and Hydro-treating Unit (right).



Miscible Drives Ousting Waterfloods?

The big, unitized miscible flood project in Pembina field (PW—Sep.11 '59,p24) points up what appears to be a growing preference for this method of pressure maintenance in Canada.

An engineer for Mobil Oil of Canada, Ltd., operator of the North Pembina Cardium Unit, predicts that from here on, in Canada, miscible floods—wherever and whenever applicable—"will kick waterfloods out the window."

He adds that the technique has rapidly taken hold in Pembina—Canada's largest field—as a result of research and development over the past two years.

Advanced pressure-maintenance programs also have been hurried along because of the strong policies of the Alberta Oil & Gas Conservation Board. These policies support the best recovery of oil in the shortest time.

"This leaves no room for lethargy on the part of operators," says one of the Pembina unit members. He adds that miscible drive has another big advantage: "If a waterflood fails, you're sunk. But with miscible floods, the fluids can't do anything that's damaging."

Because of reservoir characteristics in the Pembina unit, however, the world's biggest miscible flood project will be encircled by a companion waterflood.

The over-all project area is located north of the midfield barrier in the field and covers about 46,000 acres, or about 20% of the field's total acreage (map, above).

Though each portion of the pressure-maintenance project will cost about $3-million, the waterflood will take in 368 wells of the unit's total of 573, with the remaining 205 involved in the miscible flood.

Wells are on 80-acre spacing, and average depths are around 5,000 ft. Remaining oil in place in the Cardium reservoir underlying the unit is estimated at about 708-million bbl. Without pressure maintenance, recovery would amount to only 16%, due to relative inefficiency of the solution gas drive.

Of the 708-million bbl. of oil remaining, about 253-million bbl. are contained in the miscible flood area and the balance in the waterflood area.

The miscible flood is expected to result in maximum recovery of about 70% of the net oil in place, and the waterflood in recovery of 35% to 40%.

Though recovery figures underscore the benefits of miscible flood, it was not feasible to use the miscible flood over the entire area.

An engineering study showed that a 2,560-acre, 41-spot pattern was the most favorable for a miscible flood and that a 320-acre, nine-spot was the most favorable pattern for a waterflood.

"It is not feasible to miscible flood the entire proposed unit area on a 41-spot pattern because of low capacity and poor permeability distribution in several areas," the study noted.

LPG (50% propane, 50% butane) is being injected in two of the areas through wells 6-7-49-7 and 6-11-49-8. The wells are taking a combined total of 1,500 b/d.

These injections will be followed soon, an engineer reports, by gas at the rate of 2-million cf/d per well, at wellhead pressure of about 1,500-1,600 psi.

Miscible flooding of the remaining three 41-spot areas is planned for next year.

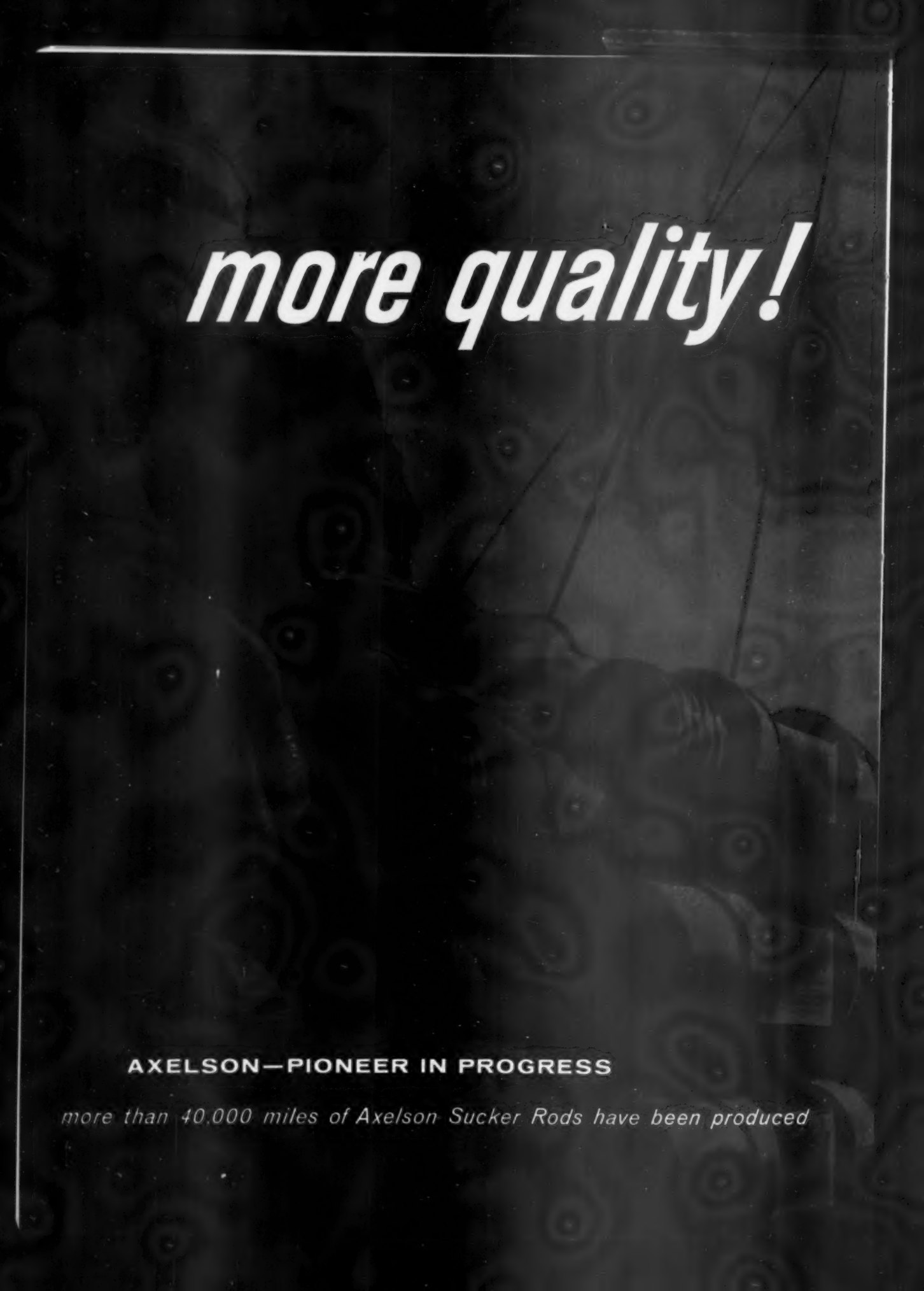
Waterflooding, to start around mid-October, will be at the rate of 150 b/d to 200 b/d per well. Maximum injection pressure will be about 1,000 psi. The area in township 48, ranges 7 and 8, will be placed under nine-spot-pattern waterflooding this year.

Increases in production allowables, due to unit operation, further emphasize the advantages of miscible drive in this unit.

The engineering study, noting that unitization was mandatory in order to utilize the most efficient recovery method, said:

"The economics of both a miscible flood and a waterflood are affected by the in-place pore volume, since in any large pressure maintenance project the allowables will likely be distributed on a pore-volume basis. The higher the pore volume, the higher the allowable; the higher the allowable, or daily oil production rate, the more favorable the economics."

Production allowables for a miscible flood promise advantages over those for a waterflood. For example, until full allowables are granted for the miscible flood—about a year after flooding starts—the flood area will produce the solution-gas-drive allowable—but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NO. 77 is manufactured from a nickel-molybdenum alloy steel, fully normalized, tempered from end to end, and is treated to develop additional high strength for extremely heavy pumping requirements. Alloy content also aids in resistance to corrosion fatigue.

SUCKER ROD COMPARISON CHART
(ABRIDGED)

ROD TYPE		MANUFACTURER							
		AXELSON	BETHLEHEM	D & B	JONES	NATIONAL	NORRIS	OILWELL	TEXASTEEL
CARBON MANGANESE	GRADE	60	X2	=1CM	2	40	30	N	A
	YIELD	65/72	65M/72A	60/75	60/75	60/70	65/75	60/75	60/80
	TENSILE	90/105	93M/100A	90/105	90/105	90/100	95/105	90/105	90/100
1¾% NICKEL	GRADE	59	46	5	7	81	40	T	NM
	YIELD	70/78	67M/75A	70/92	65/80	65/75	65/75	73/97	65/80
	TENSILE	87/95	82M/90A	88/113	85/100	85/95	82/95	85/105	85/100
HIGH STRENGTH LOW ALLOY 3½% NICKEL	GRADE	79	—	Reliance	12	92	—	W	—
	YIELD	90/98	—	95/105	95/105	90M	—	105/115	—
	TENSILE	100/108	—	115/130	110/125	115M	—	115/125	—
	GRADE	77	43	Hi-Ten	8	85	75	Y	HT
	YIELD	100/115	100M/110A	95/110	100/115	105T	105/120	95/108	110/120
	TENSILE	120/130	120M/130A	115/130	120/135	133T	125/140	105/115	125/135

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Write for illustrated sucker rod brochure

USI Axelson

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without gas-oil ratio penalties, because produced gas is reinjected into the formation.

The report said that, by considering a specific area as a whole and comparing the miscible flood allowable to the waterflood allowable in that area, "it is seen that miscible flooding results in an approximate 10% allowable increase."

The unit program calls for the great majority of the wells with high gas-oil ratios to be incorporated into the pressure-maintenance project this year.

The conservation board has been told that "there will remain a few wells in township 49, range 7, and some in the southwest corner of township 49, range 8, which will not have pressure maintenance this year.

"Under unitized operations, however, these wells will have their production taken from other wells with good performance until such time as the pressure-maintenance installations can be extended to these areas. . . .

"With the current low gas-oil ratios in the north end of the proposed unit, and the indicated improved performance, it is not expected that a delay in pressure-maintenance operations until at least 1960 will be harmful to the ultimate recovery of oil."

Total injection of LPG over a two-year period will amount to about 2.5-million bbl., at $1.20 per bbl.

"It'll be going in at the rate of $200 an hour," says a unit participant.

The propane and butane is being obtained from Goliad Oil & Gas Co.'s Pembina fractionation plant. Producers representing about 88% of the field have dedicated their casinghead gas to the Goliad conservation facilities, designed to conserve about 85-million cf/d of casinghead flare gas, and to produce about 65-million cf/d of residual pipeline gas and 196,500 gal. per day of liquid products.

The propane and butane are being diluted with dry gas prior to injection in order to reduce daily requirements.

The study reported:

"For the reservoir conditions at Pembina, the LPG can be diluted with dry gas to a considerable extent and remain a liquid which is miscible with Pembina reservoir fluid.

"The total amount of LPG required is the same, whether or not the LPG is diluted with dry gas prior to injection.

"It is calculated that 0.483 bbl. of LPG plus 725 cu. ft. of dry gas are required to form one reservoir bbl. of diluted LPG."

A unique twist in pipelining the LPG to the unit has saved both time and money for unit participants.

This was made possible by cooperation of Pembina Pipeline, Ltd., in making available one of its three lines which cross under the North Saskatchewan River.

The LPG has to be transported 11 or 12 mi. from the Goliad plant on the east side of the river to the project site on the west side.

Trucks could have been used, but not nearly so conveniently or so cheaply as the method that was hit upon—threading of a 3-in. line through Pembina Pipeline's 6-in. line. The 3-in. line simply was "floated through" on the oil that was in the 6-in. line.

Cost of a new line, had one been constructed, would have been about $100,000, and construction would have taken six to eight months.

In addition to Mobil the companies chiefly involved are Ohio Oil, California Standard, Phillips, Sun, Union Oil of California, Texaco Canada, the Home Oil group, the Bailey Selburn group, the Canadian Seaboard group, Lobitos Oilfields, Luscar Coals, Dome Petroleum, Hudson's Bay, the Whitehall Canadian Oils group, the Scurry-Rainbow group, the Carleton-Canpet group, and Canadian Amco.

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The First National brings unsurpassed services and facilities . . . in surroundings of functional beauty . . . to the progressive people of growing West Texas.

Typical of the special services is the presence on our staff of a petroleum engineer to work more understandably and effectively with you. Plan to visit the First National at your first opportunity . . . our heartiest welcome awaits you.

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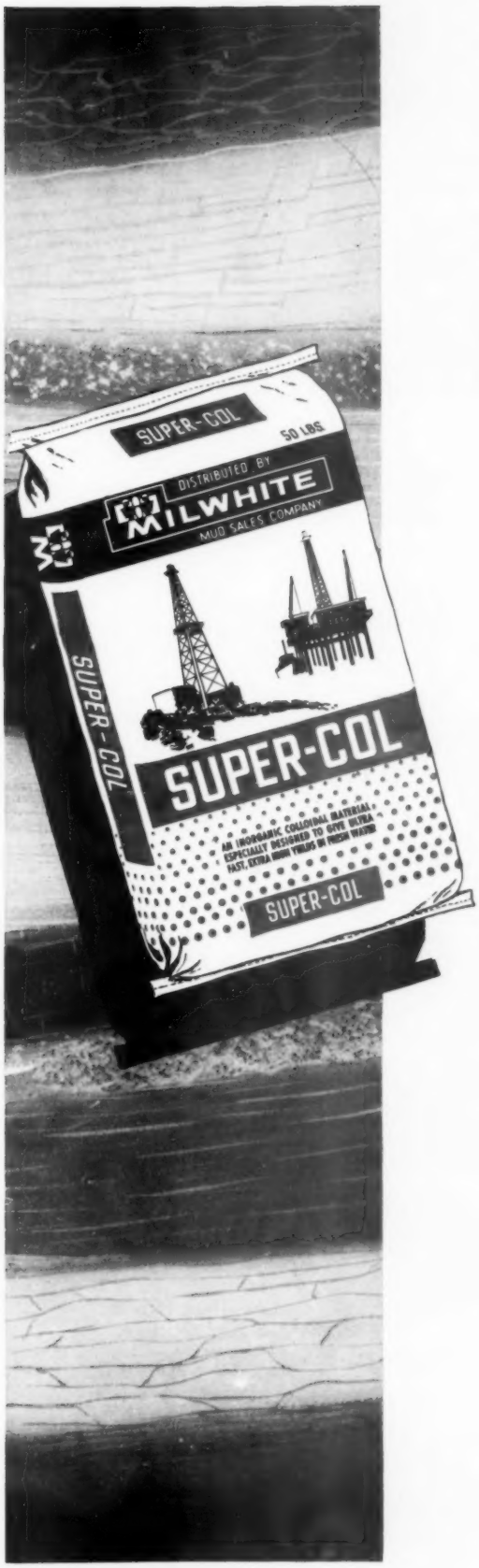
MEMBER F.D.I.C.



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(packaged in 50 lb. bags.)

MILWHITE SUPER-COL SAVES MATERIAL

Pound for pound, Super-Col will give you twice the viscosity in fresh water, in water containing up to 2½% salt, and in water containing up to 240 ppm calcium.

MILWHITE SUPER-COL SAVES RIG TIME

A fast rate of yield and a minimum amount of required mixing makes Super-Col invaluable when a pit of mud is needed "in a hurry"

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Its efficient performance will save you 25% or more in mud cost as compared with Wyoming Bentonite.

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This material has been tested at temperatures of 350° F. for as long as seven days with little or no change in viscosity.

MILWHITE SUPER-COL IS A SPACE SAVER

From offshore operations to rigs located great distances from the source of supply, large savings in storage space and transportation charges will be realized by using Super-Col.

Drilling Progress through Mud Research
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HOUSTON, TEXAS
DIVISION OF MISSISSIPPI RIVER FUEL CORPORATION

What's New / IN EXPLORATION, DRILLING, PRODUCTION

The shutting-in of some California wells last year has proved beneficial for Union Oil Co. of California.

Union says wells in its Torrey Canyon (Calif.) field that previously were pumped are now flowing, and that in Lompoc field, wells that formerly had high water cuts now produce with low water cuts.

The company attributes the improvement in the Torrey Canyon wells to its continuation of the pressure-maintenance program by gas injection during the 18 months the field was shut in.

This, says Union, increased reservoir pressure and restored gas energy to the formation oil.

Lompoc field was shut in for a similar period, during which a controlled gas injection program was continued.

•

Drilling will be regulated in Tennessee for the first time in the state's history.

State geologist W. B. Hardeman says the "moderate" regulations being drafted will include the requiring of a permit, a "mild" spacing arrangement, a requirement that logs be kept for the benefit of state geologists, and "a few other customary rules."

He says the rules may become effective in October.

More than 30 rigs are reported to be operating in Tennessee, near the Kentucky border, as part of the widespread play extending south of Green County, Ky.

•

Louisiana's attorney-general believes the state may win its offshore lands dispute with the Federal government.

The official, Jack Gremillion, says he expects the U.S. Supreme Court to rule on the case early in December, which would be the normal 60 days after final arguments are held on Oct. 12.

More than $200-million now held in escrow rides on the decision.

The Gulf Coast states—Texas, Mississippi, Alabama, and Florida—claim ownership of the water bottoms up to 3 leagues—about 10 mi.—from the coastline. The government says they own no more than 3 mi. into the Gulf.

•

U.S. Glass & Chemical Corp. is starting construction of a $500,000 mill to produce barite in southwestern Arkansas.

Initial production of the mill, which will be located in Howard County, is planned to be about 35,000 tons a year of barite for use in drilling muds.

For the past 15 years, Arkansas has been the leading state in the production of barite.

•

The most complex unitization agreement in Nebraska's history will go into effect in two weeks when Pan American Petroleum Corp. starts a waterflood project in Kimball field, Kimball County.

Pan Am, which will be the operator, says the agreement—signed by 700 royalty owners and 600 working interest owners—is so complex because a portion of the field underlies town lots in Kimball.

Production from the 48 wells in the eight-year-old field has dropped from a peak of 3,430 b/d in 1957, to 875 b/d last month.

•

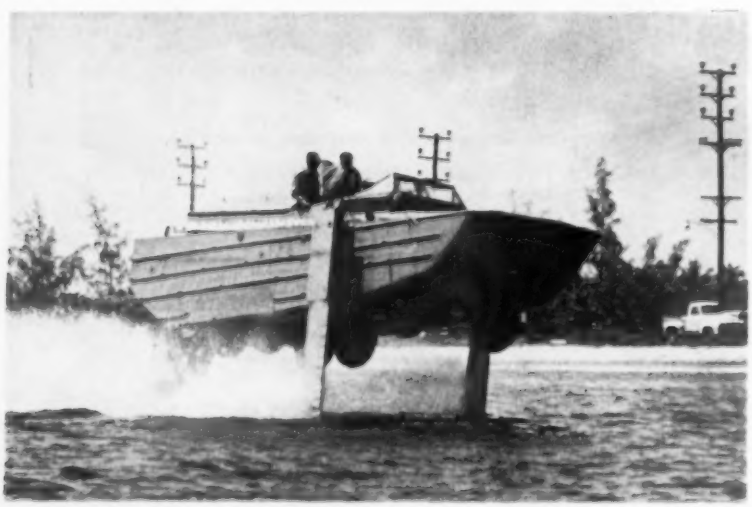
A group of 18 companies and individuals will drill a 12,000-ft. test near Nulato, west-central Alaska.

Location is on a federal unit of almost 100,000 acres in the Koyukuk Cretaceous Basin, on the Yukon River 100 mi. inland from the Bering Sea.

The project is being managed by an operating committee headed by Paul G. Benedum, of Pittsburgh. Other members of the operating committee include William V. Byrd, Renwar Oil; Robert O. Garrett, Texas Gas Exploration; Michel T. Halbouty; Ralph A. Johnston, Texas National Petroleum; David Philley, Woodley Petroleum; Vernon Taylor, Jr., Peerless Oil & Gas; and William E. Wallis, Pan-Alaska Corp.

•

Clays from San Benito County, Calif., can be used as additives for

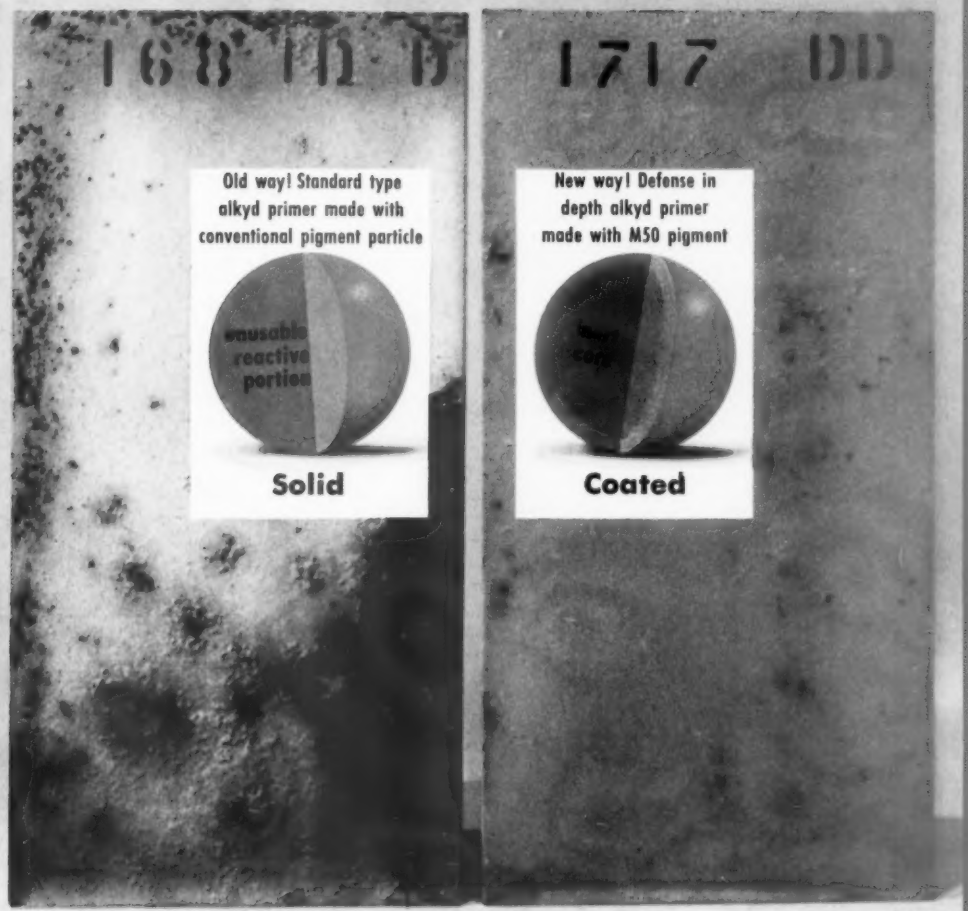


New Army Craft Has Offshore Oil Potential

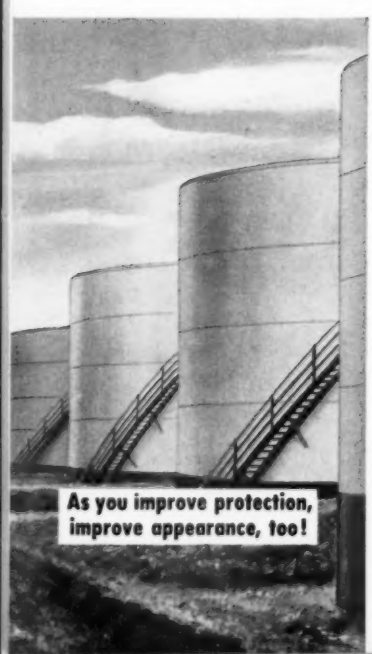
Originated as a landing craft for the U. S. Army, this vehicle, which can roll, float, and "fly," is being modified for industrial usage such as hauling cargo and personnel to offshore oil installations. The craft is able to skim about 4 ft. above the water's surface by the use of three hydrofoil wings, which are about 30 in. below the water's surface at top speed.

It is powered by an 860-hp. gas turbine engine built by Lycoming Division of Avco Corp., and is said to be capable of reaching speeds over 40 mph. It has a range of 250 mi. and is said to be ideal for rough water.

Never before such durable tank protection


Old way! Standard type alkyd primer made with conventional pigment particle
unusable reactive portion
Solid
New way! Defense in depth alkyd primer made with M50 pigment
Coated

Proof tank paints with M50® pigment form rust-inhibitive films of outstanding strength and durability



Test panels like these *prove* what paints can do. And these two make it plain that paints containing *M50* basic lead silico chromate — a new National Lead rust-inhibitive pigment ... form outstandingly strong and durable protective films.

Excepting the pigment, both primers shown on the test panels contain the same ingredients. Both are applied (2.0 mils, dry) on rusted and mill-scaled steel (to increase test's severity). Both have been exposed 12 months in industrial atmosphere (Perth Amboy, N. J.) and 12 months in normal atmosphere (Sayville, L. I.) at 45° South. You can see the effect.

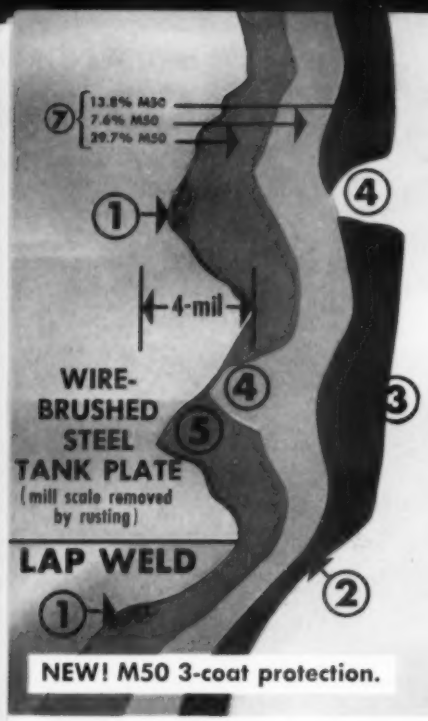
A striking difference! Yet film strengthening proves to be only one of many improvements that *M50* pigment makes in metal protective paints for steel tanks and structures. Now — with new *M50* pigment — your regular paint suppliers can provide metal protective paints with outstanding advantages:

- Weather-resistant anti-corrosive primers.
- Intermediate and finish paints *with* exceptional rust inhibition but *without* bilging hazard in sulfur-laden atmospheres.
- Finish paints in a wide range of decorative colors that don't fade or wash out.
- Alkyd-type conventional and heavy-coat paints with outstanding durability, package stability and sprayability.

What makes the difference? Basically the differences that make a difference in *M50* pigmented paints are inherent in the unique *M50* coated pigment particle itself (idealized particle shown above.) See, on the next page, the extra protections the *M50* particle provides in the dried film. See, too, how you can get the benefits of these new, much more durable, anti-corrosive paints.

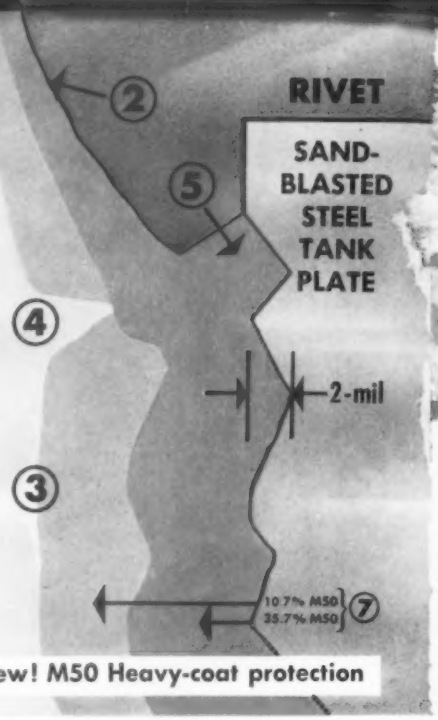
M50 pigment is a product of National Lead Company

General Offices: 111 Broadway • New York 6, N. Y.



NEW! M50 3-coat protection.

1. **Pockets of rust prove less harmful** on steel surfaces painted with conventional *M50* paints. Vehicles penetrate and isolate existing rust. *M50* particles stop rusting action.
2. **Where paint film lies thin** over tiny surface projections and sharp structural edges, the *rust-inhibitive* pigment content in all coats of *M50* paints provides extra protection.
3. **Just-right flow characteristics of** package-stable *M50* paints aid leveling on rough steel surfaces, promote smoothness, good appearance.
4. **Inevitable "holidays" in film** do not destroy protection. Again, *all M50* coats have both rust inhibition *and* weather resistance.
5. ***M50* paints "wet" well,** penetrate pits and crevices, carry *M50* protection to every part of these danger spots.
6. **Lightweight *M50* particle** aids formulation of new type heavy-coat paints with *uniform* rust inhibition throughout the film and low sag characteristics.
7. **Every coat can have rust inhibition** — not just the primer. Note percentages of *M50* in dry films. What's more, for equal weights of corrosion-inhibitive pigment, *M50* primers contain 40-60% more corrosion inhibition by volume than non-*M50* primers.



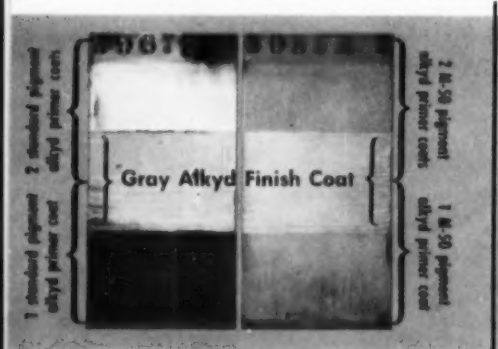
New! M50 Heavy-coat protection

Sections through **M50** Defense in Depth films show dramatic extra protection these new tank paints provide

Information on the preceding page proves that *M50* pigment paints form stronger protective films than anti-corrosive paints made with other rust-inhibiting pigments. The sections above show some of the ways in which these new paints perform better in the dry film. Below you will see *proof* that *M50* metal protective paints don't bilge, are unique for color stability and the color range in which they can be made.

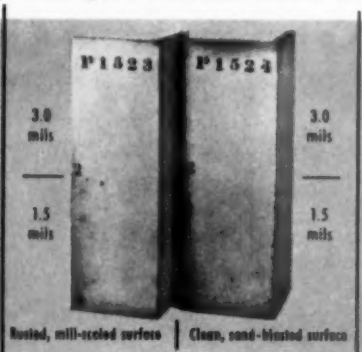
Hold the *M50* pigment particle itself responsible for all these improvements . . . *Basic lead chromate* is known for exceptional rust-inhibiting action. In the *M50* particle, this reactive business portion of the particle is coated on an inert core . . . where *all of it is available* to react. The coating is *fused* on—shows superior resistance to chalking, erosion, chemical action. Unusual tintability is due to the geometric configuration of the coated silica particle.

Why M50 Defense in Depth paints give anti-corrosion beyond all former concepts


1 standard pigment alkyd primer coat
2 standard pigment alkyd primer coats
Gray Alkyd Finish Coat
1 M-50 pigment alkyd primer coat
2 M-50 pigment alkyd primer coats

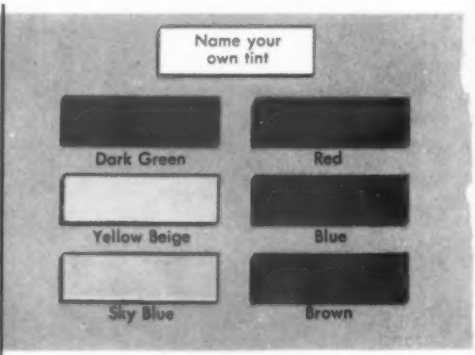
Exposed 9 years, 45°S. Each coat 1.5 mils

Proved corrosion and weather resistance



Exposed 4 years adjacent to refinery

Proved anti-bilging performance



Available in conventional and heavy-coat paints

Proved stability in wide range of colors

Are you concerned with tank or structure maintenance painting in your firm? If so, you are invited: (1) to visit National Lead's Sayville, L.I. test station, where you will see the results of the 20 years research that lies behind the *M50* pigment particle and the more than 10 years of exposure testing that lies behind *M50* pigment Defense in Depth paints; (2) to send coupon below for National Lead booklet, "Defense in Depth" and typical *M50* tank paint specifications.

Next time you purchase, specify *M50* pigment paints. Any paint manufacturer can supply you.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me the "Defense in Depth" booklet together with typical tank paint formulas and color chips that I can use in specifying M50-type tank paints.

Name_____ Title_____

Firm or Dept._____

Address_____

City_____ State_____

salt-water muds in offshore drilling, a Bureau of Mines report says.

The bureau, which conducted field and laboratory studies, says the bentonitic clays from San Benito's Vallecites district aren't generally as good as bentonites from Wyoming. But it adds that the California clays have properties that make them superior as additives for salt-water muds.

•

Rayflex Exploration Co., of Dallas, will operate the newly acquired Scientific Service Laboratories, Inc., as a wholly owned subsidiary.

Merger of SSL into the Rayflex group of companies was effected by an exchange of stock. SSL is a developer and manufacturer of geophysical and electronic equipment. W. B. Huckabay, former executive vice-president of SSL, will be president of the subsidiary company.

•

Lease sales by the Texas School Land Board and other leasing boards will be held later this year if sufficient interest is shown by prospective bidders by Oct. 1.

Bill Allcorn, state land commissioner, has asked prospective bidders to submit their requests for oil and gas leases on state lands by that date.

The state board for lease of highway lands, which has been urged to refrain from leasing highway tracts until 1961 pending a revised state policy, may choose to disregard that legislative directive if response by Oct. 1 warrants.

•

Consolidated Oil & Gas, Inc., has acquired operating interests in 32 oil and gas wells in Texas and New Mexico.

Harry A. Trueblood, Jr., president, says the recent acquisition takes in nine producing gas wells in San Juan County, N. M., and 23 producing oil wells in Post Glorietta Field, Garza County, Tex.

•

The largest public auction of oil and gas leases ever offered on North Dakota school lands will be held Sept. 21 at Bismarck.

The 430 tracts offered total 106,160 acres and are scattered in 23 counties.

•

Sun Oil Co. has acquired a prospecting permit covering about 50,000 acres of bituminous sands in northeastern Alberta.

Sun paid $5,491 for the tract, desig-

3 H-F TUBE
BEST FOR SAND, ABRASION AND TEMPERATURE
• If you are producing some wells that are hard to keep pumping because of sandy fluid or trash or high bottom hole temperature, the next time you're in your supply store ask them to show you a Harbison-Fischer 3-Tube Rod Pump. • You can readily see that because the loose-fitting tubes use the fluid itself as the plunger sealing medium, entrained solids won't stick and bind the plunger nor score the barrel tube. Same for high temperatures; there's little chance for unequal expansion of the different metals to bind the pump. And if you want to pump your wells faster, the free-falling action also allows a greater strokes-per-minute rate—without being hard on the rods. H-F 3-Tube Rod Pumps are available for 2" through 4" nominal tubing, in lengths to 25'. • For hard-to-pump wells—or as an efficient, all-round pump for average wells—you can depend upon the H-F 3-Tube to make good production without frequent pulling jobs. Ask your store, one of our more than 50 factory representatives, or write to us at Box 127 in Fort Worth for an illustrated bulletin. There's no obligation, of course.
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HARBISON-FISCHER
MFG. CO. • FORT WORTH

TO MARKET, TO MARKET...

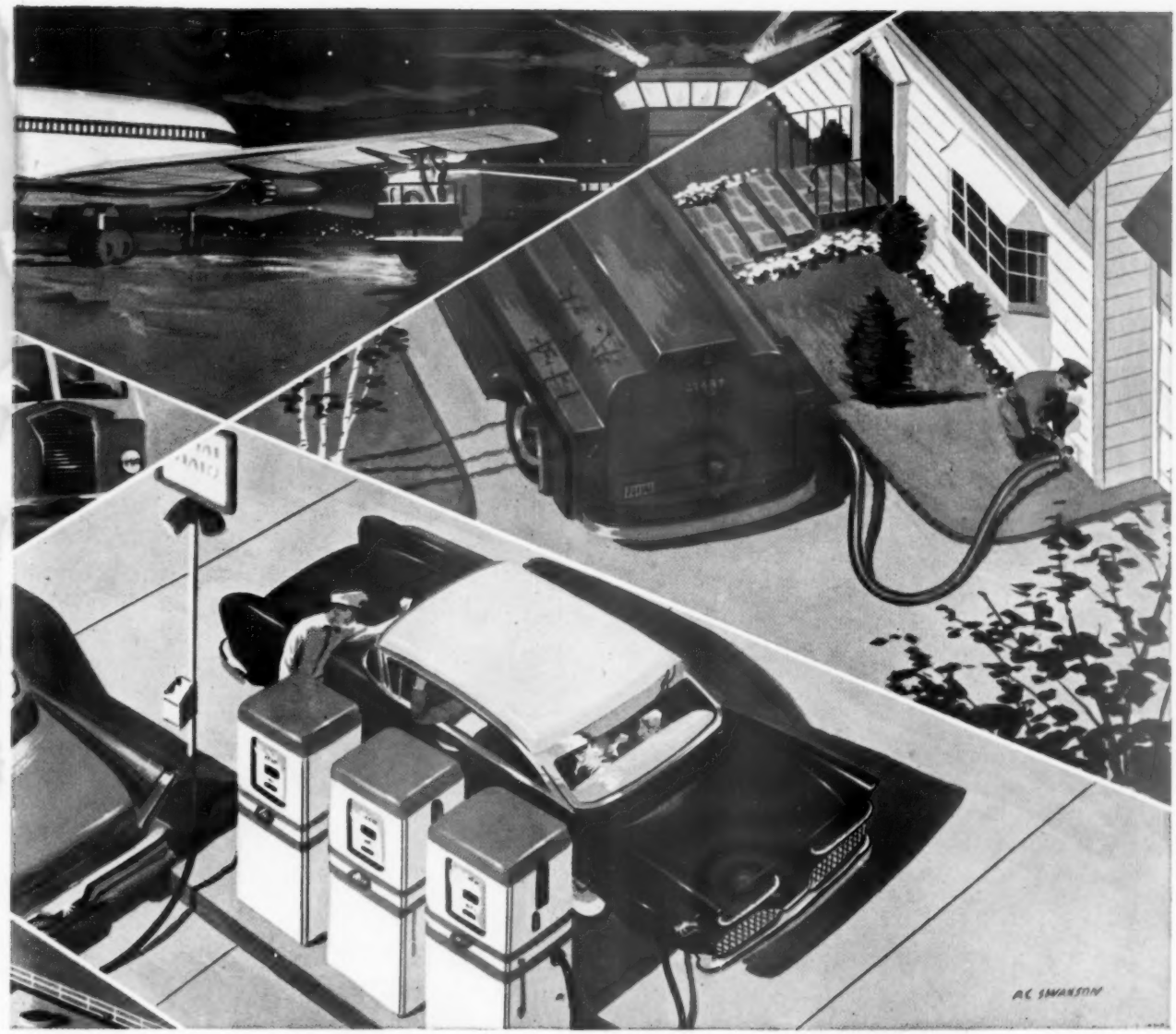
To market, to market . . . not to buy a fat pig, but to transport crude oil to the refinery, fuel oil to the home and to industry, gasoline to the service station (and from there to your car), fuel to power large jet planes. Whenever petroleum products have to be moved, you'll find U. S. Royal Oil Marketing Hose on the job.

United States Rubber makes *the complete line* of oil marketing hose to serve industry afloat or ashore or in the air.

Here are several of the outstanding hoses in the line:

U. S. ROYAL GASOLINE PUMP HOSE P-5167 The outstanding gasoline hose with a revolutionary steel-braid construction. It's for external drape or internal retractable pumps. This almost indestructible hose has extreme flexibility and will outlast conventional hose. Has positive static connection. Excellent flexibility, even at low temperatures. Approved by Underwriters' Laboratories, Inc.

U. S. ROYAL FUEL OIL DELIVERY HOSE P-5177 Used for tank truck delivery of fuel oil to home and industry. Also handles diesel fuels for wet or dry service. The heavy-gauge TAN



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cover stands up under the roughest of handling. Hose is light in weight, surprisingly flexible. Conforms readily to reel even in low temperatures. Braided static wire in hose carcass.

U. S. ROYAL AIRCRAFT REFUELING HOSE P-5178 Specially developed tube to handle aromatic fuels. Strong three-braid construction for fueling and defueling service. TAN nonmarking cover is unaffected by elements or petroleum products and is resistant to abrasion. Carcass design gives flexibility and is light in weight, easy to coil and handle. Static wire furnished on request.

U. S. ROYAL TANK WAGON HOSE P-5175 is both a suction and discharge for tank cars or trucks conveying gasoline and oils. This lightweight, extremely flexible hose has not one, but *two* fabric braids, *plus* a wire spiral. This construction provides a rugged body for suction and discharge service.

• • •

It is a source of satisfaction to purchasing agents of major and independent oil companies to know that the superior U. S. Royal Oil Marketing Hose they need is readily obtainable from their local Oil Equipment Jobber.

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United States Rubber

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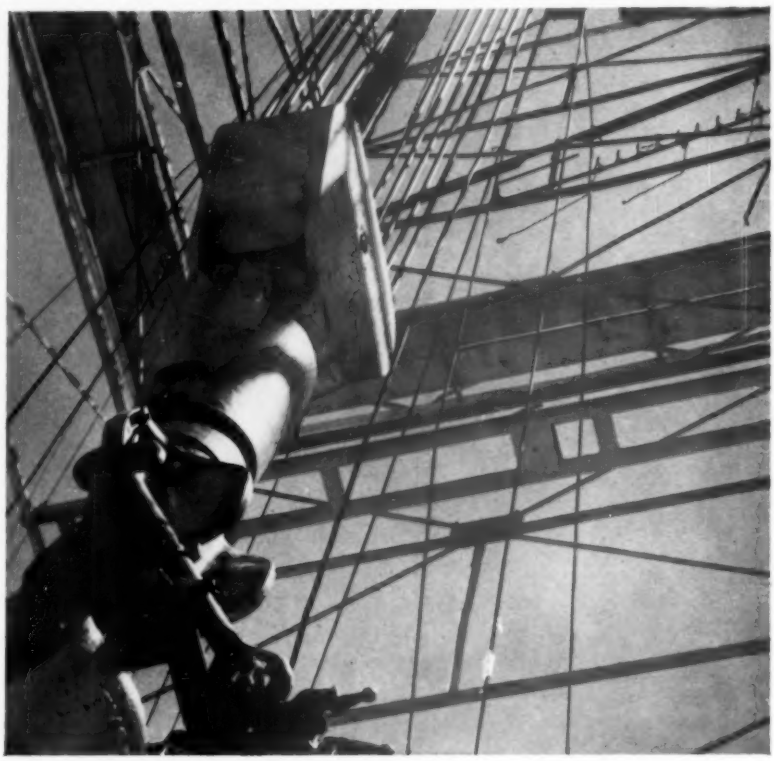
What is more important for efficient, economical drilling and completion than your mud and cement programs?

Rig up for Lower Cost Drilling and Completion... with DRISCOSE* and DIACEL**



Let us give you the benefit of experience gained over many years on thousands of wells. **Drilling muds and cement systems are our only business.**

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Also, complete DIACEL cementing literature, data and technical reprints are available.

**A trademark

*Driscose is a trademark for Sodium Carboxymethylcellulose

DRILLING SPECIALTIES COMPANY
Bartlesville, Oklahoma

nated Area No. 11, in the Sept. 1 sale held by the province. The tract is about 50 mi. southwest of McMurray, in the Athabasca tar sands region.

•

Engineering

R. G. LeTourneau, Inc., has developed a new self-leveling device for offshore platforms which automatically compensates for shifts in the ocean floor.

If faulty ocean bottoms cause the platform to tilt even a fraction of one degree, says R. L. LeTourneau, vice-president, the automatic system actuates the motors that are normally used to raise and lower the platform on that specific leg.

In addition, a warning horn on top of the platform is sounded automatically.

LeTourneau says the device will not only protect platforms from listing but will also provide continual stability during drilling.

•

Drilling Highlights

Colorado—Skelly Oil Co. No. 1 Bailey, section 3-26s-45w, Prowers County, yielded 72 b/d of oil on the swab through perforations at 5,027-36 ft. in the Morrow. The prospect, on the east flank of the Las Animas Arch, is 2 mi. south of the only other well in the county, a shut-in gas well completed last year in the Morrow.

Alberta—Shell Oil Co. of Canada, Ltd., No. 9 Waterton, lsd 6-12-41-1w4, in Waterton gas field, may become Canada's deepest hole if it is carried to the target Mississippian, which is expected at 16,500 ft. The present depth record of 15,283 ft. was set by Northern Foothills Agreement Group's No. 8-28 Simonette River, lsd 8-28-60-3w6, a dry hole. Shell is expected to spend from seven to eight months drilling No. 9 Waterton, which was below 700 ft. at last report.

Oklahoma—Sinclair Oil & Gas Co. No. 1 W. E. Overton Unit, section 13-3n-23e, Beaver County, flowed 4,640,000 cf/d of gas on 3-hour drill-stem test of the Oswego at 6,316-440 ft. Recovery was 840 ft. of 44-gravity oil. The prospect is 2 mi. south of production, and 15 mi. southeast of the nearest Oswego production, in Floris pool.

East Texas—Whiffen Estate, Inc., No. 1 Danie Memorial Orphanage, Simon Sanchez survey, Freestone County, flowed 8 bbl. of oil per hour on test through ¼-in. choke and perforations at 4,707-17 ft. in the Woodbine. The discovery is on the west flank of Butler dome, giving the county its second dome pay area; the other is 10 mi. southwest, at Oakwood.

Texas Panhandle—Apache Oil Corp. No. 1-A Luthi, section 401, block 43, H&TC survey, Ochiltree County, was completed for 3.6-million cf/d of gas and 6 b/d of 68-gravity condensate through perforations at 9,322-36 ft. in a lower Morrow sand. The discovery is 2¼ mi. northwest of gas production in the Turner area.

Mississippi—Carter Oil Co. No. 1 Kennedy, section 13-3n-5e, Rankin County, was completed for 14,560,000 cf/d of gas and 65 b/d of condensate through perforations at 9,310-20 ft. The discovery is 7 mi. north of Martinville field.

New Mexico — Penson-Montin-Greer Drilling Co. No. 1 Greer, section 2-26n-11w, San Juan County, was completed for 237 b/d of oil through ⅜-in. choke and perforations at 5,459-662 ft. in the Gallup. Nearest Gallup production is 2 mi. west, in Gallegos field.

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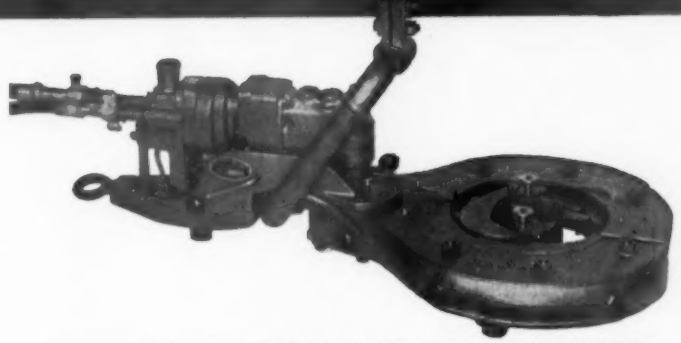

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During July, Wisconsin and Michigan gained an added eighty million cubic feet of natural gas daily — through new loops paralleling Michigan Wisconsin Pipe Line Company's main line. Between the Laverne field in Harper County, Oklahoma, and the W. G. Woolfolk Station near Big Rapids, Michigan, 374 miles of 24-inch pipe were laid — all furnished by *A. O. Smith*.

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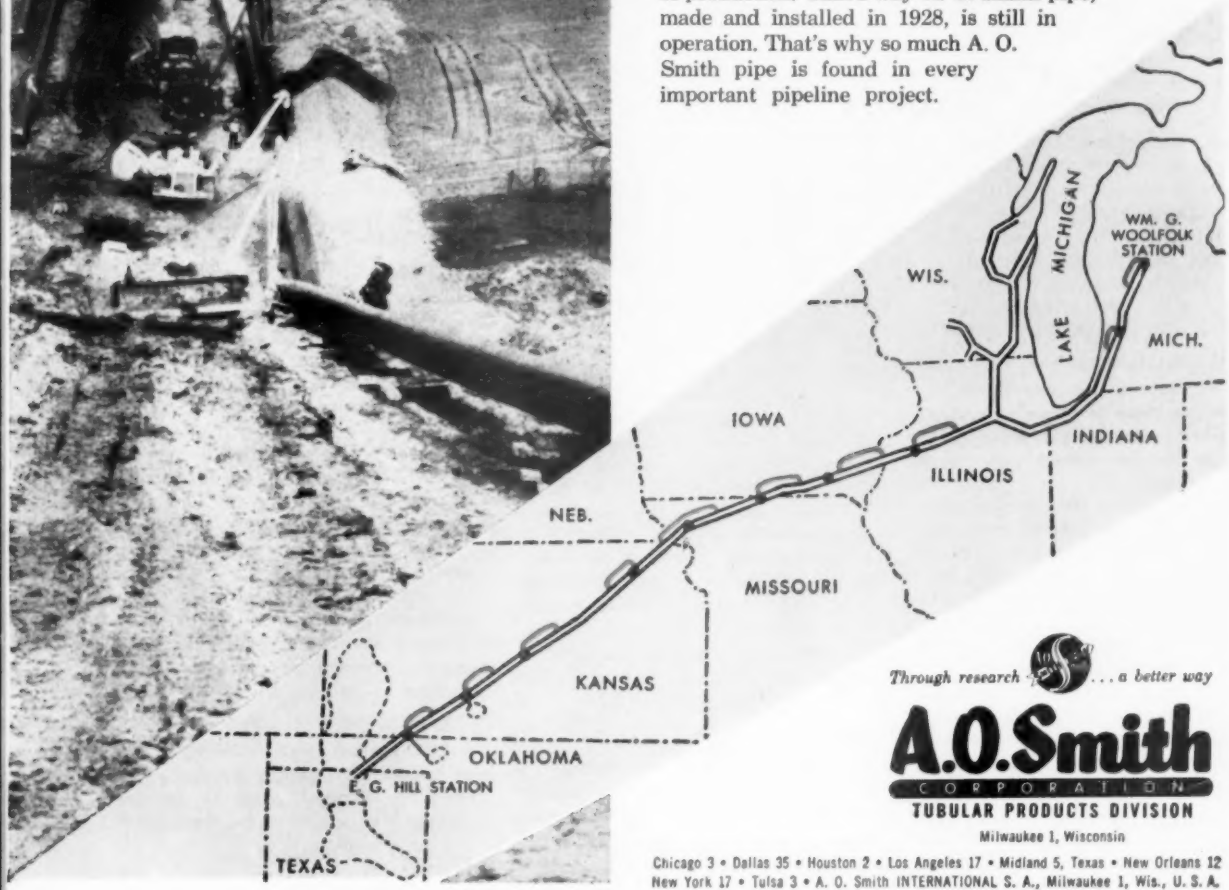

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New Weapons To Fight Water Corrosion

To minimize the damage caused by cooling water to refinery equipment, new materials, new coatings, and new techniques are being brought into the picture today.

Refineries have a great number of condensers and heat exchangers as part of their various processes. If the refinery is located near a river, a lake, or the seashore, it is often economical to use as cooling medium the water "as found," without any preliminary treatment, letting it pass once only through the cooling equipment.

This brings about a serious corrosion hazard, especially when the water is brackish or downright salty. Pumps, valves, pipes, and heat exchangers can be put out of commission in a few months by physical, chemical, or electrolytic attack from cooling water.

When huge quantities of water are not readily available, water is usually recirculated, after having had its temperature lowered in cooling towers. In such a case, the water is generally chemically treated, which reduces its corrosion potential.

But even with treated water, other precautions must be taken.

New, internal coatings of various types have been tried out, with reasonable success.

Conventional asphalt or bituminous coatings are rapidly being replaced by synthetic formulations, such as urethanes, vinyls, glasses, Teflon and neoprene, and epoxy resins (alone or blended with coal tar).

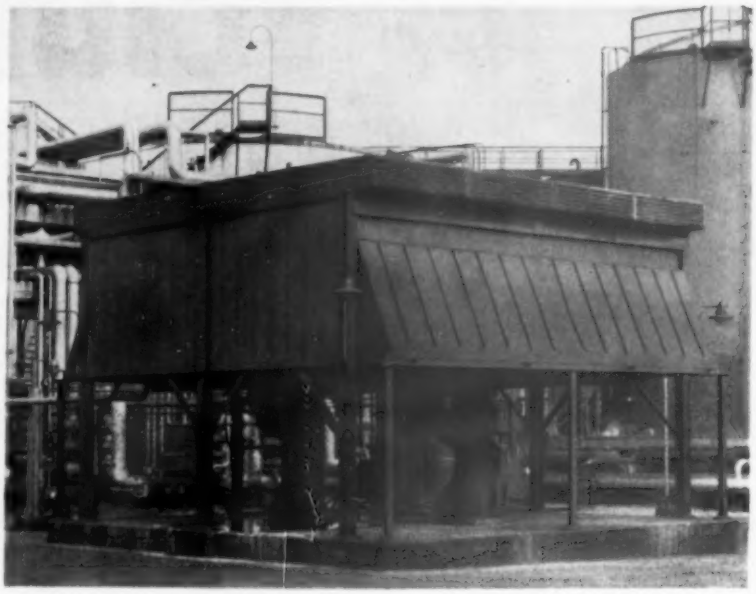
But no coating has been found yet that will adhere permanently to the internal surfaces of a cooling system. And when some of it gets loose, great damage to the system may result (pictures, page 48).

Before applying any coating on a metal, the surface to be covered must be very carefully prepared. This is often difficult, if not impossible, in a cooling system, due to the intricate internal shape of the equipment.

"Even when coatings with excellent adhesion properties are available," says R. D. Merrick, head of the corrosion research group of Esso Research & Engineering Co., "considerable machining, perhaps even redesigning of parts, will be necessary to make sure that absolutely every portion of the metal is protected, and electrolytic action is avoided."

One drawback of the internal-coating method of protection is that damage to the coating cannot be detected unless the entire system is stopped for inspection, and downtime is always expensive in a refinery.

Another drawback is that pinholes have been found to develop through most of the coatings tried, resulting in intensified electrolytic corrosion.



AIR COOLING does away with water corrosion at Cities Service refinery in Linden, N. J.

New plastics are being developed to replace metal and wood in portions of cooling installations.

Cooling towers, for example, can be built of plastic instead of wood, with a much longer life expectancy.

Refiners' attention is at present attracted by the development of plastic pipes of the thermosetting or thermoplastic types, and of plastic-lined steel fittings for elbows or bends.

Esso has developed new copolymers of butadiene and styrene, called C-oil, now available in pilot plant quantities. When subjected to an air-blowing treatment, C-oil becomes a butoxy resin. When it is reinforced by glass fiber, this thermosetting butoxy resin makes very satisfactory plastic pipes, with good corrosion resistance, Esso says.

A very promising development is the recent application to cooling-water pipes of the "cathodic protection" process which has been in use for years in pipeline and storage-tank operations.

When cathodic protection is applied to water cooling, the system may be considered as the reverse of an electric battery (PW—Jul.19'57,p34), with the cooling water acting as the electrolyte, the pipe as the cathode, and some sacrificial anodes, such as pieces of inexpensive magnesium, zinc, or aluminum, installed at specific distances inside of the pipe, and being slowly eaten up by corrosion.

Another way to obtain cathodic protection is to install inside the pipe nonsacrificial, permanent anodes of lead alloy or platinum, and to pass through them a mild electric direct current, to balance the electrolytic action of the system. Esso has recently installed in England its first cathodic protection system of this type, in a 48-in.-diameter cooling-water pipe, 1 mi. long.

Readily accessible reference plugs permit checks of the effectiveness of the system. For example, for a copper-copper-sulfate reference point, if the charge is maintained at 0.85 volts or higher, corrosion will not proceed, according to Esso.

Most economical method, at present, seems to involve the combination of a coating, properly applied, with cathodic protection from anodes mounted at, or close to, the center line of the pipe, according to J. H. Morgan, of Sturtevant Engineering Co., Ltd., London.

Several U.S. refiners agree with that conclusion. The anode may be a lead

The "silk purse" miracle . . .

A complete switch of the proverbial sow's-ear-to-silk-purse procedure! That's what transpired when a UOP researcher succeeded in converting a fraction of gasoline, normal butane, into isobutane . . . for which, at that time, there was not much use!

But development of this new "isomerization technique" paid off. Demand for alkylate for blending into high-octane gasoline suddenly developed. So too, did a demand for isobutane, used in making alkylate . . . and UOP was ready with a butane isomerization process.

Constantly striving for improvement, Universal's continued research has produced a new and better process, Butamer*, now available to refiners the Free World over. Readily and economically integrated with UOP's widely-used Alkylation processes, it provides a practical and profitable way to convert normal butane into the finest quality gasoline.

Research is where you find it . . . and UOP research scientists are constantly alert to unexpected opportunities. For research sometimes makes its contribution where least expected.

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In passing a recent certification test at Ohio State University, a 3-section length of UNIBESTOS was boiled continuously for 72 hours, then subjected to a 24-hour period of drying. Results: no opening-up of longitudinal or butt joints; almost complete absence of fraying. It did not mush or fall away from pipe and, when dry, did not change in shape or physical characteristics. UNIBESTOS is easy to cut . . . clean to use . . . won't shrink or thermal shock!

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alloy held near the center by a neoprene-covered handle. Or it may be the latest European development: a titanium wire, 285 platinum plating at given intervals, in which the platinum alone acts as anode.

A rapidly growing trend in cooling —which does away with the water-corrosion problem completely—is toward air-cooled heat exchangers (picture, page 46).

Fin-tube heat exchangers, with variable-speed fan drives, or with controllable-pitch fans, take much more space than conventional water heat exchangers, but they are becoming very popular in new installations.

The first refinery to be 100% air-cooled was recently put on stream at White Gate, Ireland. It is operated jointly by Caltex, British Petroleum, Shell, and Esso; the latter did the engineering.

Many other refineries are being equipped with complete, or part, air-cooling, in the U.S., Germany, Great Britain, Holland, Norway, and elsewhere. The new refinery being built at Bataan, in the Philippine Islands, by Foster-Wheeler Corp. for Standard-Vacuum Oil Co. will be largely air-cooled.

It is sometimes advisable, especially in warm climates, to "trim" with water-cooling the work done by the air-cooler.

In Lima, Ohio, for example, Standard Oil Co. of Ohio air-cools the overhead stream from its cat-reformer, at a pressure of 5,000 psi., from 475F down to 135F in a Griscom Russell fin tube exchanger. Final cooling, to 70F, is then accomplished with water.

The reason why these new methods are being actively explored is that even the best chemical treatment of water does not seem to give complete protection unless other precautions are taken.

Adequate chemical water treatment must take care of such phenomena as inorganic scale formation, growth of algae and bacterial slime, delignification of wood in cooling towers, and corrosion of metal surfaces. This is a big order.

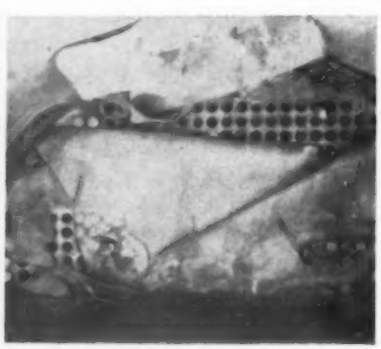
Many proprietary chemicals are being offered today for the combined control of scale formation (calcium carbonate is the worst offender in that respect, because of its low solubility, and because its solubility decreases when the temperature increases) and reduction of corrosion.

Water-treating installations use such chemicals as surface-active agents, ion-exchange resins, polyphosphates, silicates, and chromates. To these products must also be added chemicals, frequently of chlorine base, to prevent the growth of organic bodies. And a minimum acidity must be maintained to protect the wood of the towers.

"A satisfactory water treatment is usually expensive," says R. W. Manuel, senior corrosion engineer of Socony Mobil Oil Co., which applies chemical treatment to cooling water in nine of its refineries in the U.S. and in Venezuela. "Furthermore, there is always the chance that some of the chemical may get lost, during blowdown, spraying, or through some accidental leak or an unexpected chemical reaction in the water. As the concentration is kept to a minmum for economic reasons, protection stops unless the system is kept under constant vigilance."

Whether the water is chemically treated or not, certain alloys are often used to protect expensive equipment against corrosion. But these are costly, and are vulnerable to impingement, pitting, cracking, and dezincification.

For instance, admiralty metal (70% copper, 29% zinc, 1% tin), when properly inhibited (by phosphorous, antimony, or arsenic), seems to resist corrosion well when used for exchanger tubes. It loses its effectiveness however, when subjected to high temperatures.



POOR ADHESION causes protective coatings to come off and obstruct exchanger.

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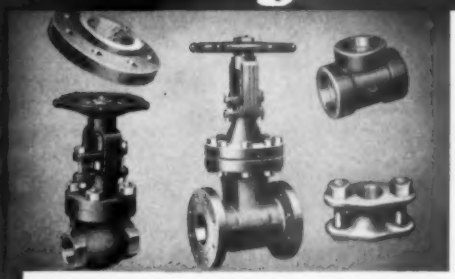

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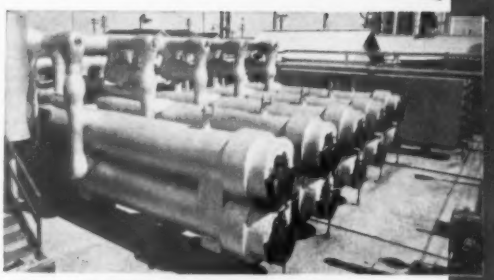
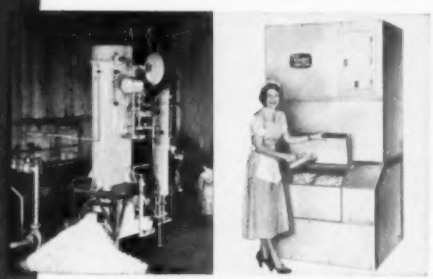
Forged from carbon and alloy steels, Vogt valves, fittings, flanges and unions are built to safely handle liquids and gases at high pressures and temperatures in the modern petroleum refinery and petro-chemical plants. The complete line includes flanged, screwed and socket weld end globe, gate and check valves—ells, tees and crosses—couplings—bushings—plugs—unions—flanges and flange unions—and weld caps.



PROCESS EQUIPMENT FOR EVERY SERVICE

Vogt constructs process equipment in wide variety to all Codes. Stills and towers, oil chillers, crystallizers, heat exchangers, molding machines, etc., serve in the manufacture of oils, greases, 100 octane gasoline, synthetic rubber, chemicals and related products around the world.



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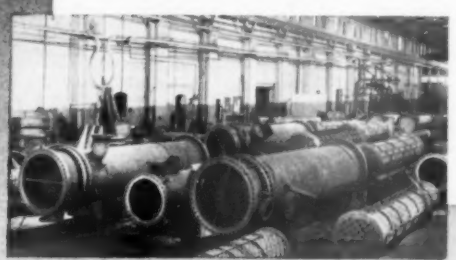

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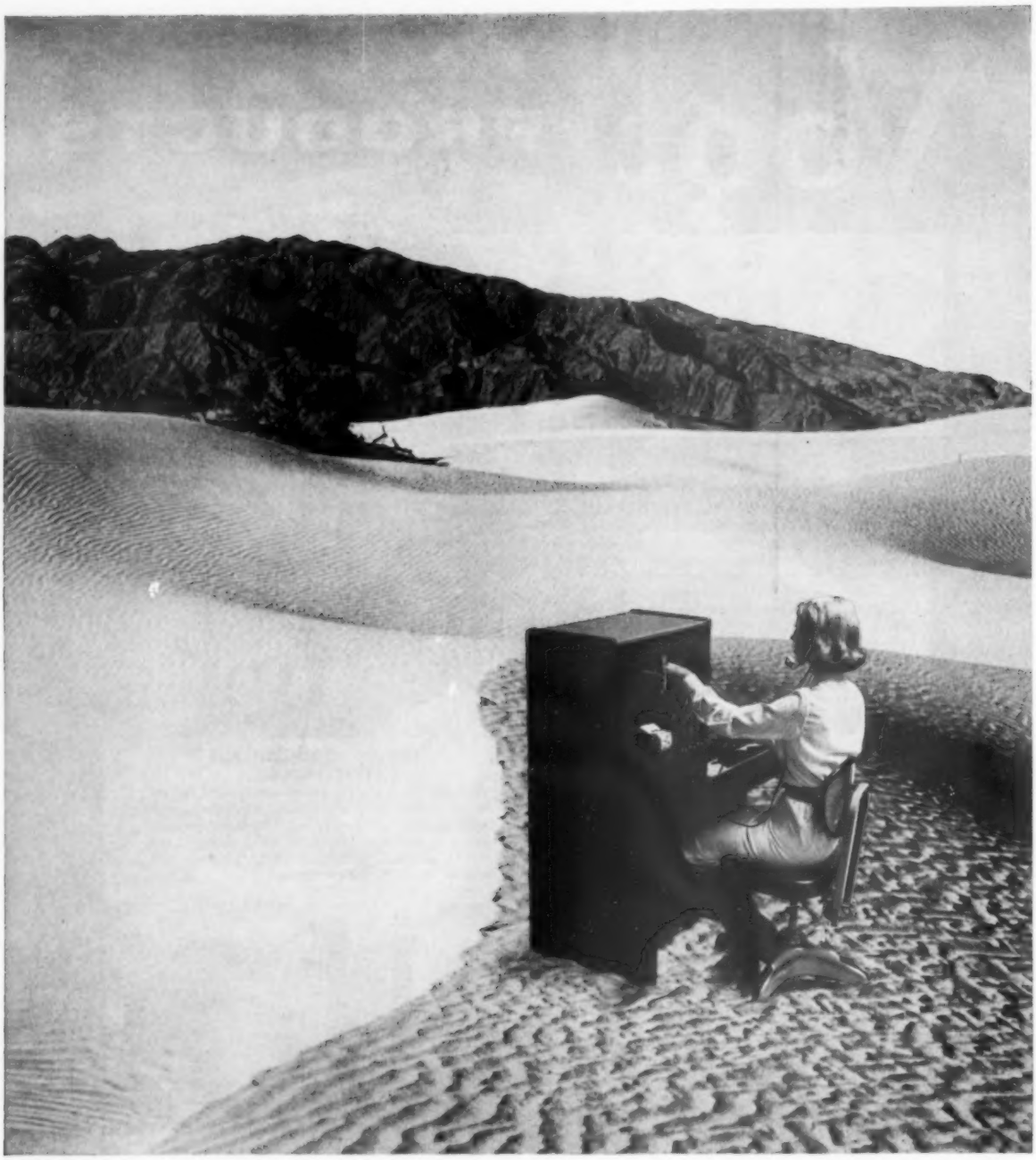


This oilwoman waits for a telephone ring that can bring the desert to life.

She's part of the huge oil communications network, proud to be in an industry that is helping the desert to bloom. Example: the Four Corners area, where Utah, Arizona, Colorado and New Mexico meet. Here, wastelands are pulsing with new life and industrial vigor—because of oil. The next time you hear somebody speak out against oil—tell him you're an oilman and glad of it. And tell him why.

SHELL OIL COMPANY

DU PONT *Petroleum Chemicals* NEWS

Number 98 in a Series of Bulletins for the Petroleum Industry

SEPTEMBER-OCTOBER 1959

How to use winter weather and RP-2 to increase brand loyalty for your gasolines

New TEL Manager

JOHN R. SABINA is our new manager of the tetraethyl lead and planning section of Du Pont's Petroleum Chemicals Division. He replaces T. Baldwin Prickett, who retired March 31 after 33 years in the petroleum industry.

Mr. Sabina joined the Du Pont Company in 1937, heading a new group in the Organic Chemicals Department. In 1944, he became manager of the petroleum chemicals section and two years later became technical manager of the newly formed Petroleum Chemicals Division.

Has Published Many Technical Articles

Mr. Sabina holds a B.S. in Electrical Engineering from the University of Pennsylvania and was associated with the Atlantic Refining Company before joining Du Pont. He is well known for his numerous technical articles in the petroleum field and his activities in technical societies.

PERISH THE THOUGHT from all your customers' minds . . . by including Du Pont RP-2 in your fall and winter gasoline blends. Du Pont RP-2 prevents carburetor icing, the most common cause of stall annoyance that can frustrate motorists into switching gasoline brands. RP-2 also prevents rust, acts as a carburetor detergent and supplies valuable phosphorus credit.

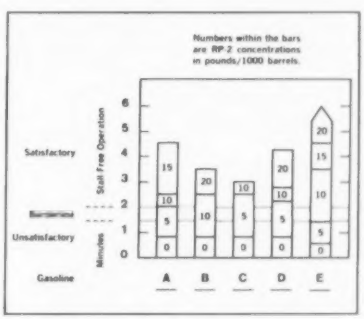
When the frost is on the ground and cold, wet winds once more fill the air, you'll have a better chance than ever to build up loyalty to your brand of gasoline.

It's when his car stalls that a motorist starts *shopping* for his gasoline and considers seriously which brand gives him the best performance.

We can help you cash in on this with Du Pont RP-2, an additive that gives three-way protection to your customers' cars and a "phosphorus bonus" to you.

Prevents stalling due to carburetor icing. RP-2 keeps throttle plates and throats of carburetors from being wetted by water droplets. Sufficient RP-2 in *your* gasoline will keep customers' carburetors from icing up during adverse weather. The chart on this page shows just how this affects anti-stalling properties.

Keeps carburetors clean RP-2 coats throttle plate, throat, and walls of carburetor, adds a detergent action which prevents foreign matter from building up



into a choking scale. This action keeps new carburetors clean, cleans old carburetors previously used with gasolines unprotected by RP-2.

Controls rust RP-2 forms a barrier between metal and moisture, blocks rust formation before it can start . . . prevents rust in the fuel system and during storage, too.

ADVERTISEMENT—Prepared for the Petroleum Chemicals Division of E. I. du Pont de Nemours & Company (Inc.)

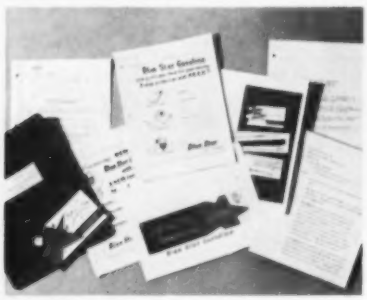
OVER

DU PONT *Petroleum Chemicals* NEWS

CONTINUED

Phosphorus credit You can take a phosphorus credit when you use RP-2. At 15 pounds per 1000 barrels, RP-2 adds about 0.03 theory of phosphorus to premium grade gasoline.

How to get started for next winter First, you'll want the complete technical story on RP-2, contained in a new bulletin. You can get a copy by calling your Du Pont representative or writing us direct.



You can follow this up with this complete merchandising and advertising kit, based on proven methods for getting the optimum attention from your market when you use RP-2 additive.

Have you heard about our linear programming service?

In case you missed our offer a few months ago, we take this chance to reiterate the fact that we have set up a linear programming service in our Petroleum Chemicals Division.

This service can help you organize the vital variables of processing and blending in such a way that modern calculation methods can be applied to get an integrated analysis of all gasoline manufacturing operations.

A study covers such factors as: the value of each gasoline component . . . optimum reformer severity . . . the volume of components which should be purchased or sold . . . the product quality shortage or give-away on all inspections related to specifications . . . the loss sustained by diverting components to other grades of gasoline or products through choice or necessity . . . and economical use of tetraethyl lead.

For more information on this service, see your Du Pont representative or write Du Pont, Petroleum Chemicals Division, Wilmington 98, Delaware.

FOA-2 gives fast answers to sludging problems from heavy fuels

At a large industrial chemical laboratory, Du Pont FOA-2 was added to a sludge-ridden tank during fuel delivery. Tank was successfully de-sludged with only $20 worth of FOA-2, with no down-time. This eliminated need for $800 mechanical cleaning.

A chemical manufacturing plant found it could save $600 per cleaning by using Du Pont FOA-2 in an eighteen-U-tube oil heat exchanger which previously had to be dismantled twice a year for cleaning.

At a large laboratory, operators no longer have to clean the burner tip in their boiler every five days . . . in fact, they have not cleaned it at all since they started adding FOA-2 to their fuel, months ago.

A large office building had to clean a burner nozzle every day, including weekends. FOA-2 makes it possible for the same burner to run for four days without a cleaning.

A chemical plant had a serious sludge problem in its preheater when tubes became plugged with deposits so hard they couldn't be cleaned at all. Since adding FOA-2 to their fuel, this problem has ceased and over-all cleaning time has been cut by four-fifths.

These are just five of many recent success stories for FOA-2.

If you're having a sludge problem from the use of heavy fuels, such experience shows that you can count on eliminating or at least minimizing the problem with the help of FOA-2.

If you'd like to know more, contact the Du Pont Petroleum Chemicals Division representative nearest you, or write us direct for a bulletin.

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Du Pont Tetraethyl Lead and other Petroleum Additives

OVER

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A-11520

Printed in U.S.A.

Tritium Used In Fuel Study

Tritium—a radioactive isotope of hydrogen—is being used by Ethyl Corp. to measure variations in the distribution of the fuel to the individual cylinders of an internal combustion engine.

D. E. Cooper, R. L. Courtney and C. A. Hall of the Research & Development Dept. of Ethyl Corp. presented the results of their study to the Petroleum Division of the American Chemical Society, at its annual meeting in Atlantic City this week.

All the gasoline, Ethyl found, is not vaporized when it enters the cylinders. Some of it is still in liquid form, and that liquid portion is not distributed evenly among the cylinders.

This leads to a difference in concentration between the high-boiling and the low-boiling fractions of the fuel in the cylinders, and also to a difference in the distribution of the additives used in the gasoline. For example, high-boiling tetraethyl lead (TEL) and phosphorus additives will be in oversupply in certain cylinders, while lead scavengers, such as ethylene bromide and chloride, will be in excess in others.

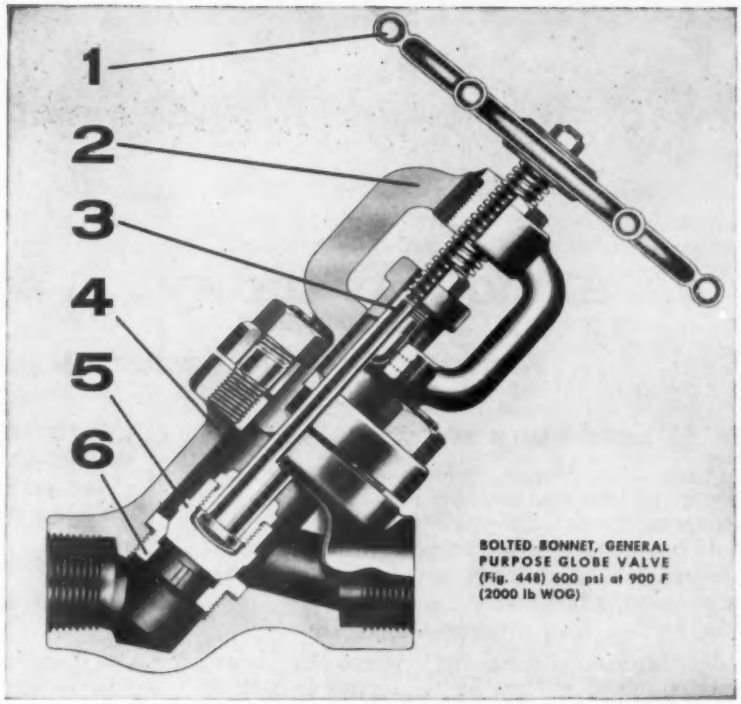
Such an uneven distribution of fuel affects antiknock performance, deposit formation, engine output, and economy.

Ethyl found that the concentration of a high-boiling fraction, such as octadecane, in the cylinders deviates by an average of 15.1% from its normal concentration in the gasoline, while cyclopentane, a light-boiling fraction of gasoline deviates by a 10.6% average—but with an opposite distribution pattern. On the other hand, toluene, which has an intermediate volatility, is rather evenly distributed.

Ethyl studied each component of the fuel separately, by "labeling" it with tritium and measuring the concentration in each cylinder's exhaust with a scintillation spectrometer.

Tritium is now made available at low cost by the Atomic Energy Commission. When a hydrocarbon is left exposed to tritium for a certain length of time, some of its hydrogen is replaced by tritium, and it becomes radioactive. The necessary exposure time can be shortened from two weeks to a few minutes by passing a spark through the mixture.

The emission of radiation by these tritiated substances was extremely low —only 5 millicuries of activity were



BOLTED BONNET, GENERAL PURPOSE GLOBE VALVE (Fig. 448) 600 psi at 900 F (2000 lb WOG)

You need less maintenance with...

Edward Globe Valves for petroleum services

For hundreds of petroleum services from oil field to refinery, Edward globe valves give longer, trouble-free service at less cost. Here are some reasons why:

1 Handwheel of malleable iron is properly proportioned and knobbed for easy gripping

2 Forged steel yoke withstands rugged service

3 Stem is wear resistant EValloy 13% chromium stainless steel

4 Body of forged steel is streamlined for minimum pressure loss

5 Disk of 13% chromium stainless steel or chromium-cobalt-tungsten alloy steel is also available with Stellite hard surface

6 Replaceable seat is made of wear-resistant EValloy 13% chromium stainless steel or hard-surface Stellite. Integral Stellite seat also available

UNION BONNET, INSIDE SCREW GLOBE VALVE (Fig. 2698) 600 psi at 900 F (2000 lb WOG)

MANY FEATURES AVAILABLE— With Edward globe valves you have a wide selection of features.

- inside screw or O.S. & Y. construction
- screwed ends or socket welding ends
- bolted bonnet (shown above) or union bonnet (below)
- backseat stem or disk-nut shoulder for repacking under line pressure
- ratings to 2500 psi at 1050 F, 10,000 lb WOG
- sizes from ¼" to 2"

Edward builds a complete line of cast and forged steel stop, check, and stop-check valves for all pressures and temperatures.

For additional information, see your favorite distributor, or write for Globe Valve Bulletins 551 & 14G to Edward Valves, Inc., 1236 West 145th Street, East Chicago, Indiana. Subsidiary of Rockwell Manufacturing Company.

EDWARD STEEL VALVES
another fine product by
ROCKWELL

A look at today . . . and a glimpse

Armour Chemicals for oil production

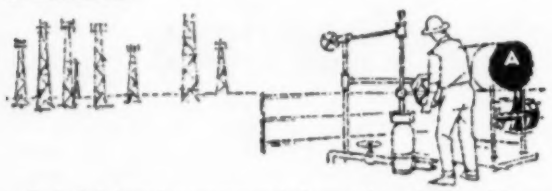
Where they work today

For many years, Armour aliphatic organic chemicals have solved numerous problems in the production of petroleum. That's why you'll find them at work where injection waters are being treated, when HCl is being inhibited, or where water coning problems are being studied.

Treating injection waters

Today there is ever-increasing evidence that shows corrosion inhibitors *alone* are not enough to control corrosion in water flood operations effectively.

A variety of field applications confirm the theory that bactericides are needed, too. In fact, there are many indications of a direct correlation between the presence of sulfate-reducing bacteria and the degree of corrosion.



In brief, here's some new information obtained from a report presented at an A.P.I. committee meeting.

(*a*) By injecting only small quantities of a bactericide into a system known to contain sulfate-reducing bacteria, 80% protection against corrosion was obtained. No other inhibitor was used.

(*b*) Most sulfate-reducing bacteria are known to multiply at an accelerated rate when temperatures increase. Actual tests show bacteria multiply 10 times faster at 95°F than at 77°F. As a result, when temperatures increase, bacteria increase—and so does the rate of corrosion.

In fact, the report shows the rate of corrosion jumps about 100 times with 130°F increase in temperature.

The above information was further substantiated by field tests.

In a cooperative test on an East Texas flood, one of Armour's organic chemicals—a combination inhibitor/bactericide—reduced the corrosion from 68 MPY to 1 MPY.

At the same time, all sulfate-reducing bacteria were brought completely under control.

And this protection was accomplished at a cost of less than 1 mil per barrel of injected water!

Here is what Armour recommended as a treatment procedure for "seasoning" a typical system.

- Slug the system with 40-50 ppm bactericide/inhibitor (basis: fluid injected) for about 3 days.
- Cut back the concentration to 25 ppm for 7 days.
- Further reduce the concentration to about 10 to 15 ppm after a bacterial analysis has verified complete control of bacteria and effective reduction in the rate of corrosion.
- Continue periodic sampling and analysis to assure the treatment continues to be effective.

Armour's Petroleum Section is aware that certain field conditions may interfere with the initial slug treatment with a bactericide/inhibitor. Therefore, we suggest that you talk to your Armour representative regarding your specific treatment problems. He can give you recommendations for your special water flood situation.

Check "A" in the coupon for complete information.

New HCl Inhibitor

Armour's new hydrochloric acid inhibitor—Armohib® 28—is now available to the petroleum industry.

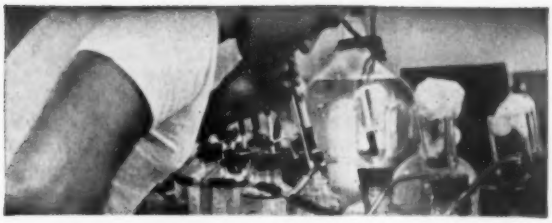
This fatty-nitrogen-derived chemical is of special value when HCl is used to remove harmful deposits or scale during the fracturing or acidizing of oil wells.

As little as 0.25% of Armohib 28 enables you to use a 10-15% HCl solution and get 99.8% protection against pitting and corrosion. The cost? Only $0.0125 per gallon of acid.

In addition, this new inhibitor is completely safe to use. It produces no harmful side effects to reservoirs or fluids.

15% HCl solution on mild steel for 6 hours at 200°F

% Armohib 28	Corrosion Rate lbs/ft²/day	% Protection	Cost per Gallon of Acid	Visual Appearance
(Control)	7.9	—	—	Disappeared in 4 hours
0.10	0.0310	99.6	$0.005	Bright, No Pitting
0.15	0.0260	99.7	0.007	Bright, No Pitting
0.25	0.0190	99.8	0.012	Bright, No Pitting



# of tomorrow

from Armour Chemical

Further testing of Armohib 28 at 265°F has also produced excellent corrosion protection on mild steel.

Here are some additional advantages of Armohib 28:

- It effectively controls corrosion of 316 stainless steel, monel, bronze and mild steel.
- It is effective over a wide temperature range.
- It's non-staining. Will not deposit a waxy surface film on treated metal; leaves the surface clean and bright.
- It will not precipitate in the presence of ferric ions.

For more protection against HCl corrosion at less cost, put Armohib 28 to work in your acid treatments.

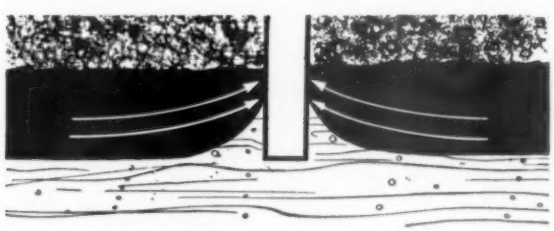
For more data, check "B" in coupon.

Where Armour Chemicals will work tomorrow

Solving the Water Coning problem

Laboratory data and field tests indicate that certain Armour water-soluble cationic chemicals—when introduced into the coned area of a producing well—will considerably reduce the water/oil ratio.

These findings were recently substantiated in a test on one well of a two-well field producing into a common tank battery. During the test, *oil production* was increased from 200 to 390 barrels per month!



The treatment consisted of solubilizing 40 to 50 gallons of the proper Armour surfactant in a 210-barrel tank of produced water. The water was then slowly pumped into the well to be treated, followed by a quantity of untreated water to displace all the treated fluid from the annulus into the cone.

This approach is based on work done by Dr. Alan S. Michaels of M. I. T.

Admittedly, additional research and field tests are needed. Armour Chemical is continuing more test programs in cooperation with several producers.

Check "C" in coupon for more complete information.

If you have problems in oil production, contact Armour. As the leading producer of organic chemical corrosion inhibitors/bactericides, we are qualified to help you determine the right chemical for your special situation. Send the coupon. Or better yet—call us today!

NEWS NOTES

Washington, D. C. Patent #2,733,206 recently issued to Armour and Company covers water flood treatment with dicoco dimethyl ammonium chlorides, or with compounds containing this chemical. Included in the patent claims are inhibition of bacteria, prevention of corrosion, and decreasing of interfacial tension between oil and water phases.

Kansas. Cost figures from a water injection system in this state, just released, show an Armour corrosion inihibitor/bactericide saved the operator almost $66,000.00. Total cost of the chemical was only $2,500!

Illinois Basin. 2½ gallons of an Armour Chemical recently increased the water intake of an injection well here from 19 to 35 barrels of water per day. After 3 weeks, with no further treatment, the well still was able to take 31 BWPD!

Texas. During a recent field test, one of Armour's polar organic compounds proved to be the only product to foam oil effectively. It is believed this chemical will prove to be very valuable in wet-gas wells which have built up a liquid head great enough to kill the well.

Leader in Progressive Fatty Acid Chemistry

Armour Industrial Chemical Company

A Division of Armour and Company

Armour Chemicals can save you money

Check here for more information on your field of interest.

☐ A ☐ B ☐ C

Send samples and more information for this application:

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PW-9-59

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110 North Wacker Drive • Chicago 6, Ill.

Best way to save with

salvage

RESULTS show that the best way to salvage equipment is the Oakite ECP way... which reclaims parts in volume via chemical cleaning. At one refinery, salvage became a major cost control factor with installation of permanent Oakite tanks. They cut cleaning time *from 22 hours to 1½ hours* a batch, slashed material cost *from $1.90 a gallon to less than 23 cents.*

An Oakite ENGINEERED CLEANING PROGRAM is developed specifically for your refinery, gives detailed recommendations for everything from coolers to crackers. The Oakite engineer sticks with the job till it's done to satisfaction. Along with his experience go products and methods developed by one of the finest chemical cleaning research facilities in existence.

Send for more data. Oakite Products, Inc., 39 Rector St., New York 6, N. Y.

OAKITE ECP your economy key

In our 50th year

used in 2 gal. of gasoline in the Ethyl tests. So Ethyl used the liquid scintillation technique to aid in identification. For that purpose, it mixed into each sample a transparent solution containing a "phosphor," which has the property of responding with a scintillation of light when energized by a beta particle.

A small sample of the exhaust from each cylinder was collected in a specially designed combination spark plug and sampling device, and condensed in a stainless steel spiral by means of dry ice. In a 15-minute run, each condenser collected about 2 cc. of frozen exhaust water. (Since it was the hydrogen atoms that were radioactive, the water component of the combustion product was the one to be measured.)

The radiation of each sample was then measured quantitatively by a scintillating spectrometer.

What's New / IN PROCESSING

Maruzen Oil Co., Ltd., leading Japanese independent refiner, is expected to establish a $6.9-million petrochemical affiliate early next month. The company will be headquartered at Osaka.

A new plant will be built at Matsuyama to produce 550-600 tons of secondary butyl alcohol and methyl ethyl ketone annually.

Maruzen's $7.2-million plant now under construction at Matsuyama will produce 5,000 tons per year of isophthalic acid, and 2,000 tons per year of terephthalic and orthophthalic acid when completed next April.

•

Plans to develop a research center at Monsanto Chemical Co.'s general offices in St. Louis were announced this week.

The initial program calls for construction of a building complex occupying about 400,000 sq. ft. of total area, consisting of two laboratories and such supporting facilities as analytical laboratories, a library, glass blowing facilities, and other services.

Monsanto hopes to have all buildings completed in 1961.

•

Petroleum coke may be used as a base for the manufacture of acetylene in Germany.

Knapsack-Griesheim, specialists in electric furnaces, are studying the possibility of reviving the old method of making acetylene from calcium carbide. Petroleum coke and lime would be agglomerated into briquettes, which would then be passed through a 40,000-kw. electric furnace to make calcium carbide.

Acetylene is then produced by the simple reaction of the carbide with water, and the intense heat produced is recovered.

•

A new catalytic hydrodealkylation process was made available for licensing this week by Universal Oil Products Corp.

The process, to be marketed under the tradename Hydeal, is the result of research conducted by UOP and Ashland Oil & Refining Co. It may be installed initially for the production of benzene from toluene, xylenes, and heavier aromatic mixtures, and may also be applied for the manufacture of penol and naphthalene from higher boiling substituted phenols and alkylnaphthalenes.

•

Engineering

A hand-size chromatograph with a new type absorption column can now separate ten hydrocarbons of a gaseous mixture in two minutes, according to Shell Development Co.

The new technique separates components up to n-pentane, and may speed the application of closed-loop automatic control of refinery processes, Shell says.

•

An ultrasonic method for the continuous and precise measurement of liquid level has been developed by General Ultrasonics Co., a division of Acoustica Associates, Bloomfield, Conn.

The new principle uses solid metal acoustic wave guides to measure level in liquids ranging from liquid nitrogen to thick oils and slurries.

Output can be either digital or continuous, the company says, and is adaptable to recording, control, proportioning and blending.

1.

THIS OTIS TOOL SAVED US

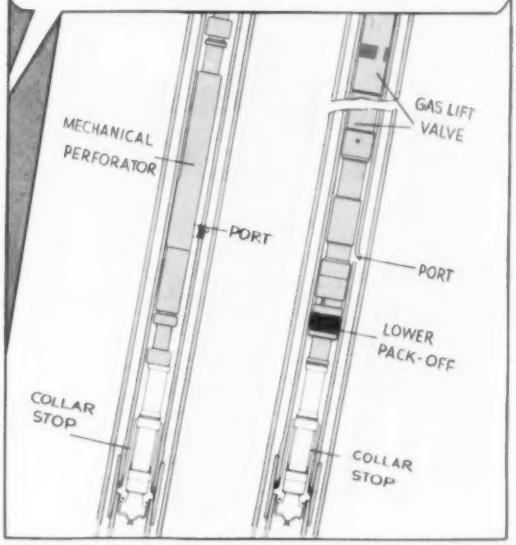
$350,000.00

IN WORKOVER COSTS LAST YEAR.

IT'S THEIR TYPE C GAS LIFT VALVE RUN WITH A TYPE G REMOVABLE TUBING PACK-OFF ANCHOR. WITH IT OTIS CONVERTED A NUMBER OF OUR OLD WELLS TO GAS LIFT WITHOUT PULLING THE TUBING — AND THEY WERE WELLS THAT WERE ORIGINALLY COMPLETED WITH NO PROVISIONS MADE FOR GAS LIFT.

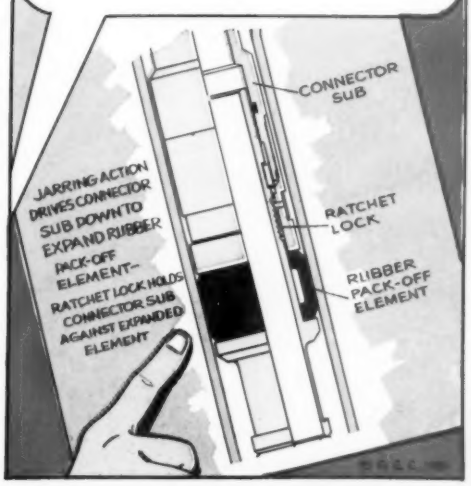
2.

THE TECHNIQUE OTIS USES IS SIMPLE AND FAST. FIRST, THEIR GAS LIFT SPECIALISTS DETERMINE THE NUMBER AND SPACING OF THE VALVES REQUIRED. THEN THEY CUT A PORT IN THE TUBING WITH A WIRE LINE MECHANICAL PERFORATOR AND PACK-OFF THEIR GAS LIFT VALVE OPPOSITE THE PERFORATION. A FULL OPENING TUBING STOP LOCKS THE TOOL IN THE TUBING. TO GIVE YOU SOME IDEA OF THE CAPACITY OF THIS TYPE OF INSTALLATION, **WE'RE MAKING 1,200 BARRELS OF FLUID PER DAY THROUGH 2" TUBING FROM ONE OF THESE WELLS.**

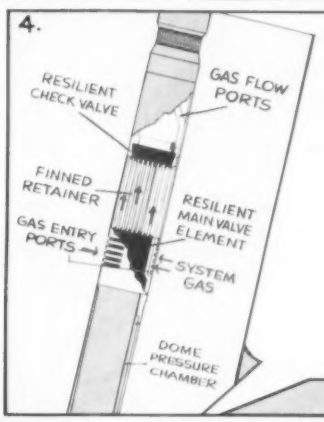


3.

AND THIS OTIS PACK-OFF GAS LIFT INSTALLATION IS ONE OF THE MOST FOOLPROOF WE'VE EVER HAD. FOR EXAMPLE, EACH CHECK VALVE AND PACK-OFF CAN BE TESTED AS IT'S RUN BY PRESSURING UP ON THE TUBING. ALSO, WE KNOW EACH VALVE STRADDLES THE PORT IN THE TUBING BECAUSE THE LOWER PACK-OFF ANCHOR IS LANDED ON THE SAME OTIS COLLAR STOP USED TO LOCATE THE PERFORATOR. AND BECAUSE THE PACK-OFF ELEMENTS ARE SET AGAINST THE TUBING WALL MECHANICALLY, WE KNOW THEY'LL STAY EXPANDED. HERE'S HOW THE PACK-OFF ELEMENTS WORK.


CONNECTOR SUB
JARRING ACTION DRIVES CONNECTOR SUB DOWN TO EXPAND RUBBER PACK-OFF ELEMENT—
RATCHET LOCK HOLDS CONNECTOR SUB AGAINST EXPANDED ELEMENT
RATCHET LOCK
RUBBER PACK-OFF ELEMENT

4.



AS FOR OTIS' GAS LIFT VALVES — THIS DIAGRAM WILL HELP EXPLAIN WHY **THEY REALLY LIFT THE FLUID.** THEY HAVE NO SPREAD — CONSEQUENTLY YOU GET MAXIMUM EFFICIENCY FROM YOUR SYSTEM GAS. THE VALVES HAVE NO MOVING METAL PARTS, NO BELLOWS TO FATIGUE, NO SEATS TO CUT OUT—AND THEY HAVE EXTRA LARGE FLOW PORTS TO PASS A MAXIMUM AMOUNT OF GAS AT A MINIMUM PRESSURE. WITH OTIS VALVES IN YOUR WELL YOU CAN PRODUCE BY EITHER CONTINUOUS OR INTERMITTENT LIFT — WITHOUT THE EXPENSE OF CHANGING VALVES.

OTIS TELLS US **THEY RUN A LOT OF THESE PACK-OFF GAS LIFT VALVES TO STRADDLE OLD STYLE "PIGGY BACK" VALVES AND ECCENTRIC SIDE POCKET MANDRELS WHEN THEY BECOME DEFECTIVE. THEY ALSO INSTALL THEM IN DUAL- AND TRIPLE-COMPLETIONS. BEFORE YOU PULL TUBING** TO PUT ANY OF YOUR WELLS ON ARTIFICIAL LIFT, I SUGGEST YOU **GET IN TOUCH WITH OTIS** AND TALK TO THEIR GAS LIFT SPECIALISTS. WE DID, AND IT GAVE US SOME OF THE MOST ECONOMICAL AND EFFICIENT GAS LIFT INSTALLATIONS WE'VE EVER HAD. IT'S NO WONDER OTIS HAS THE REPUTATION OF BEING

"First in Gas Lift Control"

OTIS — PRESSURE CONTROL — SERVICE — EQUIPMENT

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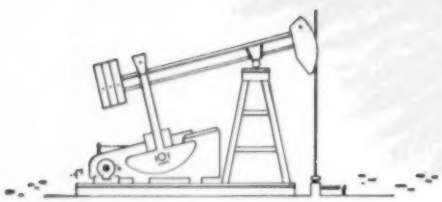
General Offices: 6812 Denton Drive • Dallas

Branches Throughout the Oil Country

Norris Suggests —

Select the Right Rod for Your Job

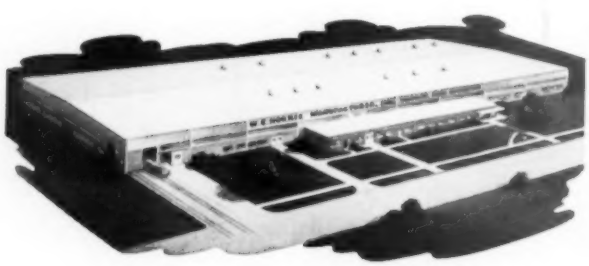
Get Longer Service and Reduce Costs



Knowing your operating conditions will simplify selecting the right sucker rod string.

Use your Norris Sucker Rod Bulletin. It's free upon request. Match your pumping condition data to the simplified tables. With a few easy calculations, shown in the book, you know the right type, size, and chemical-physical properties for selecting the right sucker rod string.

Ask your Norris Man to re-check your pumping condition and sucker rod data. It's his job to see that you get the right rods and couplings and the long life, dependable economical pumping which Norris rods provide.



From the largest, most modern sucker rod plant in the oil industry.

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SUCKER RODS
POLISHED RODS - COUPLINGS

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DIVISION OF DOVER CORPORATION
TULSA, OKLAHOMA

BRANCHES: Great Bend, Kansas; Corpus Christi, Houston, Kilgore, Odessa, Wichita Falls, Texas; Oklahoma City, Oklahoma; Salem, Illinois; Casper, Wyoming; Farmington, New Mexico; Edmonton, Alberta, Canada

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How Tanker Costs Compare

(Operating costs, profits, and losses for a typical voyage — foreign flag operation)

	War-Built T-2 16,600 tons	45,000 Tonner
Cost of ship	$1,095,000	$6,570,000
Number of days for round trip	70	60
Number of crew members	40	52
Cost per day of: Wages	$190	$230
Fuel	$650	$1,100
Stores, provisions, repairs, maintenance, sundry	$540	$705
Fixed costs (depreciation, interest, insurance, overhead)	$380	$2,000
Total cost per voyage	$123,200	$242,100
Carrying capacity in bbl.	96,000	287,000
Cost per bbl. per voyage	$1.28	$0.84
Cost per ton per voyage	$8.96	$5.88
USMC rate per ton per voyage	$17.05	$17.05
Theoretical profit per ton	$8.09	$11.17
per voyage	$110,946	$457,970
Rate per ton at USMC — 60%	$6.82	$6.82
Profit or loss per ton at USMC — 60%	−$2.14	+$0.94
Rate per ton at USMC — 75%	$4.26	$4.26
Loss per ton at USMC — 75%	−$4.70	−$1.62
Loss per day at USMC — 75%	$921	$1,107
Fixed costs per day	$380	$2,000

How Big Tankers Cut Costs

In long-haul tanker operations today, big ships are the key to survival. With U.S. import controls honing competition to a new, sharper edge, this is becoming another hard rule of the sea.

In the period between World War II and the imposition of mandatory quotas by the U.S. on foreign crude, two international incidents occurred to benefit tanker owners. The first was the Korean War, which created a demand for all available tankers. The second was the Suez Canal closing in 1956, when tankers were urgently needed to move Middle East oil to the U.S. and Europe via the longer Cape of Good Hope route.

Then, in mid-1957, the U.S. instituted a voluntary imports control program. Wary tanker operators retrenched.

And on Mar. 11 of this year, the quotas became mandatory, stiffening tanker competition.

Sizing up future prospects in the shrinking charter market, tanker operators were quick to see that T2s were fast becoming obsolete, and that only the bigger, more efficient tanker would win the scarce charters, and make a profit at competitive rates.

A comparison of the operating costs, profits, and losses of a war-built, 16,600-ton T2 and a 45,000-tonner underscores the edge held by the bigger ship over the smaller (table). The figures were supplied by one of the world's largest fleet owners.

Operating costs shown are actual figures compiled on real voyages. Moreover, the cost comparison has been used by the operator himself in arriving at maximum operating efficiencies for his own ships, which range from T2s to some of the biggest supertankers afloat.

The voyage represented is a round trip between the Persian Gulf and Los Angeles, with both ships being manned by crews of the same foreign nation.

To show how the two vessels would fare under different spot charters, three different rates are used—the U.S. Maritime Commission rate, USMC—60%, and USMC—75%.

One fact revealed by the comparison is that while the profit in operating a 45,000-tonner at a $17.05 per ton rate is four times as great as the profit of the T2, operating costs are only double.

The reason: As tanker size increases, costs increase at a rate proportionately less than the increase in size and earning power of the ship.

Only 12 more men are needed to operate a 45,000-ton tanker than are needed to man a T2. This means a per diem wage increase of only $40.

Fuel costs per day are less than twice as much as they are for the T2, although the bigger vessel weighs three times as much.

Charges for stores, provisions, repairs, maintenance, etc., run only 30% more for the bigger tanker than for the smaller tanker.

But carrying capacity of the 45,000-tonner is three times that of the 16,600-tonner.

Operating at the U.S. Maritime Commission rate of $17.05 a ton, the supertanker would show a profit for the voyage of $457,970, while the T2 would make barely a quarter of that.

The $17.05 rate is wholly theoretical, however. No tanker owner has been paid a flat rate, or a flat rate plus a percentage, since the Suez crisis. But using it for the sake of comparison illustrates dramatically the huge advantage enjoyed by the bigger ship.

At a more realistic rate of USMC—60%—a rate common today on many voyages—the supertanker still shows a profit of $1.94 per ton, while the T2 is $2.14 in the red.

The fact is that for the T2, the breakeven point is about USMC—33⅓%. Below that—and foreign-flag rates on just about all voyages today fall below that figure—the T2 must be operated at a loss.

At the rate of USMC—75%—still not an uncommon rate today—both vessels lose money.

But regardless of the rate received, the 45,000-ton tanker must always

CARRYING TEXAS AND LOUISIANA NATURAL GAS TO THE MARKETS WHERE THE MOST PEOPLE ARE

New Hudson River crossing, part of Transco's $100,000,000 construction program for 1959.

show a greater profit when compared with a T2, or a smaller loss.

Paradoxically, even though a 45,000-ton tanker loses money at USMC—75%, it's cheaper to keep it running than to put it in lay-up.

A rate of USMC—75% is fairly common today on some foreign-flag voyages.

In the case of the 45,000-tonner in the table, if it were to remain idle, fixed charges would mount at the rate of $2,000 a day. Operating at USMC—75%, the loss to the owner is only $1,107 a day.

But even at USMC—60%, it's cheaper to lay up a T2 than to keep it operating.

At that rate, the T2 in the table would lose $419 a day in operation, while the fixed charges while keeping it in lay-up would be only $380 a day.

That's why some 45,000-ton tankers are being operated at a loss, while some T2s are being converted to dry cargo ships.

"It's uneconomical to ship oil in T2s today," one operator says flatly. "They're better suited for coal or grain."

Summing up the plight of the T2s, he says:

"From an investment standpoint, a tanker is like a factory. But unlike a factory, the whole tanker becomes obsolescent at once, whereas in a factory, machines might become obsolete, but they can be replaced."

He observes that the T2 unfortunately has become obsolete before reaching the end of its economic life.

As charters now held by T2s run out, the new charters will go to the supertankers, tanker owners agree.

But while the future of the T2 is black, the outlook for the supertanker is only gray.

As long as U.S. import controls remain in effect, the operators foresee no let-up in the hard competition and low charter rates. Profits will be small, and losses will be frequent.

And, they predict gloomily, new tankers now being built might find themselves without any charters at all.

What's New / IN PIPELINES

A plan under which Texas Illinois Natural Gas Pipeline Co. would become a wholly owned subsidiary of Peoples Gas Light & Coke Co. has been approved by the boards of both companies.

Whether the proposal goes into effect, however, is contingent on approval by Texas Illinois' stockholders and by regulatory bodies, and on a ruling by the Internal Revenue Service that the proposed exchange of stock would be tax-free.

Peoples now owns about 70% of the outstanding common stock of Texas Illinois Natural Gas Pipeline Co.

•

The first Western Canadian natural gas ever to cross the St. Lawrence River is now being delivered through a pipeline of Quebec Natural Gas Corp.

The gas is going to the Contrecoeur mills of The Steel Co. of Canada, Ltd. It's being supplied by Trans-Canada Pipe Lines, Ltd.

•

The Federal Power Commission has authorized three new, small pipeline projects in scattered parts of the country:

- Columbia Gulf Transmission Co. will spend $3,916,000 to build a 41.1-mi. line looping its existing system from Vermillion Parish to St. Mary Parish, La.
- United Fuel Gas Co. plans to construct 4.8 mi. of 16-in. line near Huntington, W. Va. and add 8,400 in compressor hp. to its system there. Total cost will be $3,568,300.
- United Gas Pipe Line Co. will build a 30-in. line to replace an 8.72-mi. section of its line near the Angelina River, Tex., which will be submerged by a flood-control project. Cost will be $3,568,000.

•

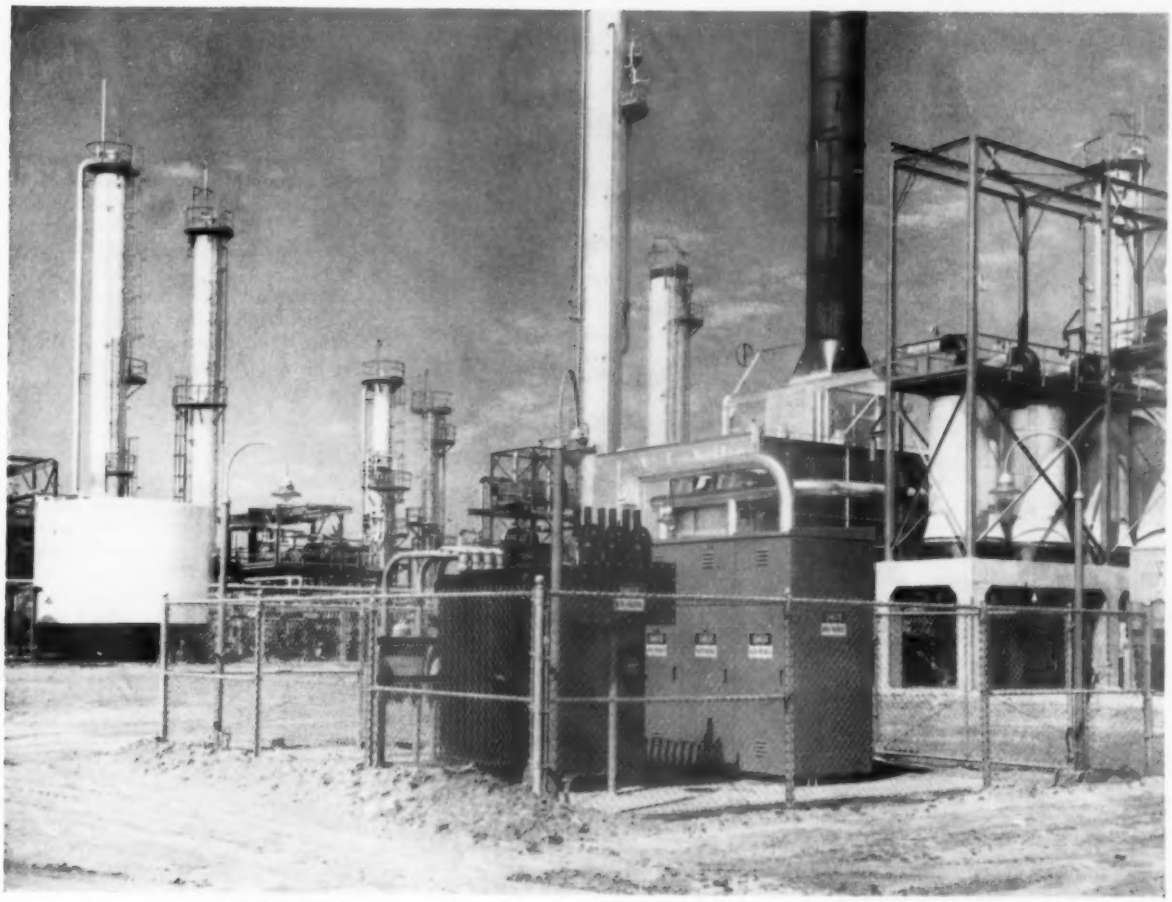
The 12,000-ton Shell tanker Auris, originally a motor ship, has become the first tanker ever to be operated entirely under gas turbine power.

Sea trials with the new engines were conducted in the Firth of Clyde and the Irish Sea. The trials were partially successful, according to Shell International Petroleum Co., Ltd.

While the gas turbine has the advantages of lightness and lower maintenance costs compared with other

You can depend on purchased electric power for

LOW MAINTENANCE



Substation for purchased electric power supplying a large southern refinery.

For energy that reduces operating costs, many refineries rely on purchased electric power.

The refinery shown here is only one of hundreds of installations throughout the country where utility electric power is at work around the clock . . . with a record of high continuity of service and low upkeep.

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types of units, the company found, fuel costs were higher than those for a marine diesel engine.

Shell, however, will continue to run the Auris to gain additional data about gas turbine power. It suggests that the turbine might be used successfully in methane tankers. Only one such ship, the Methane Pioneer, has been constructed so far.

•

The Federal Power Commission's 1958 edition of "Statistics of Natural Gas Companies" is now available.

The report contains financial and operating information about 91 companies.

Copies are obtainable at 60¢ from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

•

Engineering

Two new liquid propane meters that take the temperature of the liquid being measured and correct volume to 60F have been developed by Neptune Meter Co.

Neptune says use of its new meters will stop inventory and sales losses in cold weather, when low temperatures shrink the volume of the propane. Propane is bought at 60F. By correcting volume to that temperature at the time of a sale, no loss in volume is sustained.

•

Hartol Petroleum Corp. is building two products terminals in North Carolina with a total capacity of 18.6-million gal.

On a 50-acre, waterfront site near Wilmington, the company is putting up a terminal of 10.8-million gal. capacity for the storage of kerosine, light heating oil, and gasoline. The facilities, which will cost about $2-million, are slated for completion in May.

A 7.8-million-gal. terminal is being built in Greensboro for storage of the same products.

•

Natural gas transmission facilities costing a record $763,037,000 were authorized by the Federal Power Commission during the fiscal year ended June 30.

The new facilities will boost the total capacity of U.S. systems by some 3¼-billion cf/d. In 1958, delivery capacity was increased by about 2¼-billion cf/d.

The facilities include 4,900 mi. of new pipelines, and new compressor units with a total of 614,000 hp.

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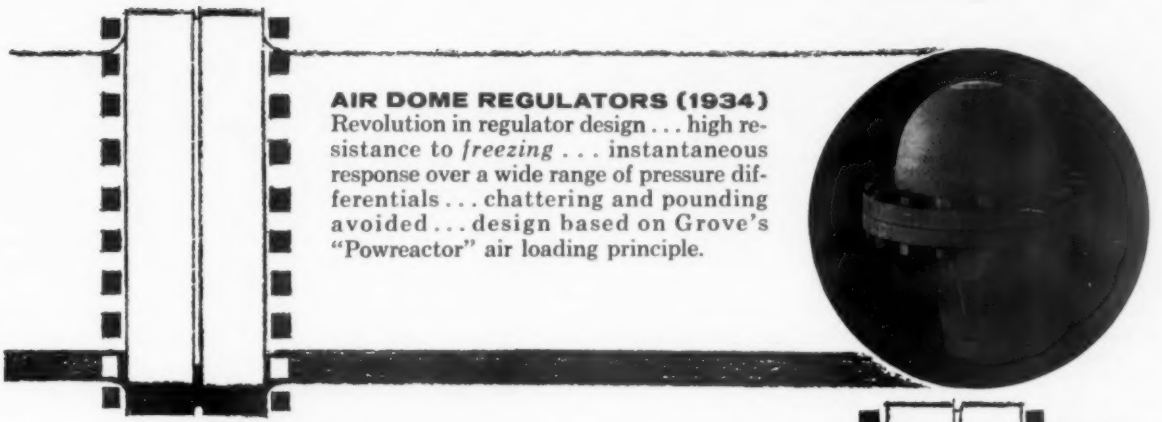

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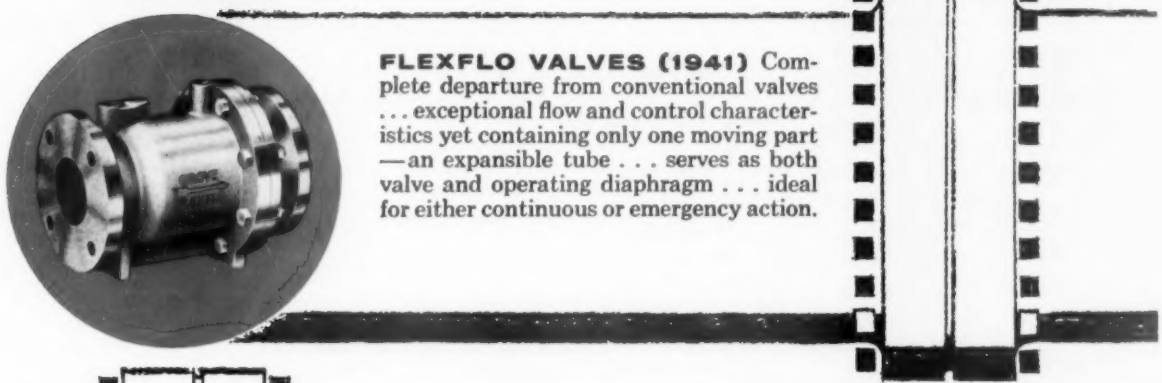

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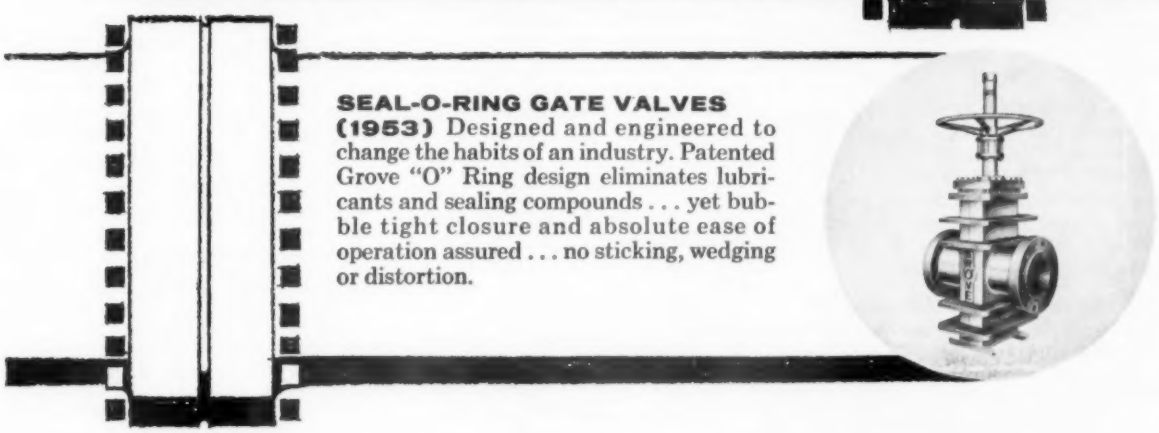

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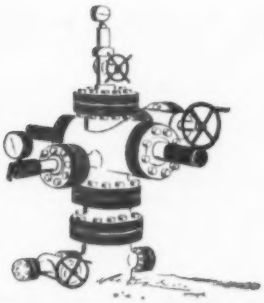

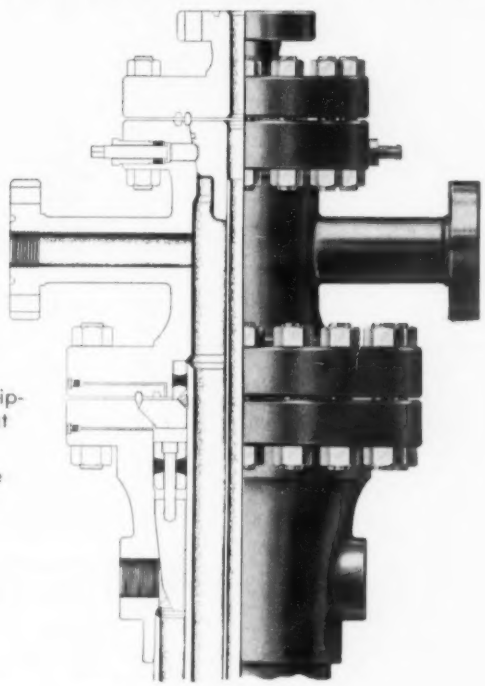

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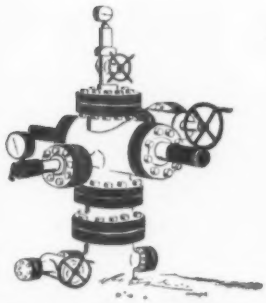

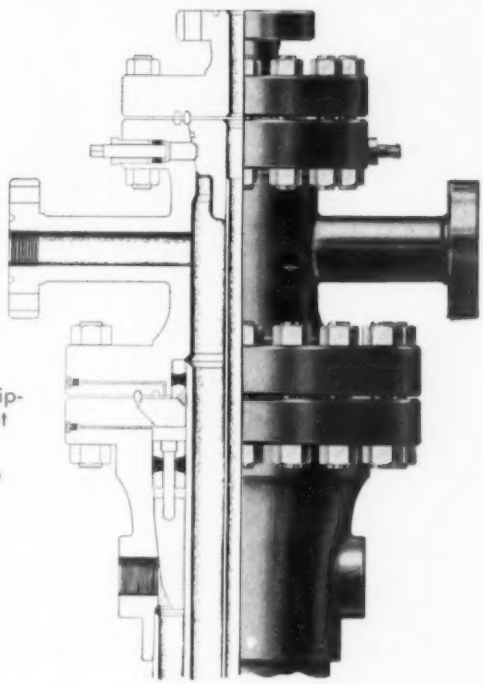

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Venezuela May Pare Labor Demands

(PETROLEUM WEEK'S Caracas Bureau)

CARACAS—It looked fairly certain this week that oil unions will win only a small fraction of their stiff demands in upcoming contract negotiations (PW—Sep.11'59,p47).

The unions' 165-clause draft contract includes 15% to 20% wage hikes plus other benefits which oil companies estimate could virtually double their present $400-million annual costs—and put them out of business.

For one thing, oil companies are in no position to be as generous as they were in 1956, when a 10% pay hike was negotiated at the height of the Suez crisis. Today, high-cost Venezuelan crude is competing in a surplus market. And companies have already been hit by higher taxes.

Further, the government—final arbiter on labor matters—has already cautioned unions against pressing demands that would undermine the economy. It is mindful, too, that it would bear a big share of added labor costs through loss of income tax revenues.

Labor Minister Luis Hernandez Solis, warning against excessive wage boosts, has said: "We must above all preserve private interests—the economic health of the nation, which depends directly on oil production." A strike, he said, would be "disastrous."

If the government is forced to intervene, the Ministry of Mines & Hydrocarbons would have the job of deciding how much additional labor cost the industry could bear and yet remain competitive.

Here are the most important provisions in the 165-clause draft contract:

• **Clause 4:** Lists activities companies must perform with their own workers. It covers practically everything: exploration, development, refining, loading, transport, etc., as well as such activities as administration of hospitals, schools, commissaries.

• **Clause 11:** Limits types of employees companies can consider in the "confidential" class (and therefore not eligible for union membership).

• **Clause 12:** To guarantee job stability, workers can be discharged only for causes specified in the Labor Law. (On the face of it, this would practically freeze payrolls.)

• **Clause 17:** A worker is not obliged to perform any kind of work outside his classification. (This appears to be featherbedding.)

• **Clause 19:** Longevity and unemployment benefits are recognized as acquired rights of workers (This means that a worker is entitled to such accumulated benefits —which form an important part of companies' total labor costs—even if he leaves the company voluntarily before retirement age.

• **Clause 22:** Increased pay for working on a normal day off—double pay if it is a weekday, 2½ times regular pay if it falls on a Sunday, etc.

• **Clause 23:** 30 days' vacation annually, with double pay. (Workers now get 29 or 30 days, with single pay.)

• **Clause 35:** Reduced work week, to 40 hours, with pay for 56 retained. (Workers on daily payroll now work 48 hours, and most office employees 44.)

• **Clause 39:** Pay hikes, as follows:

20% for those now earning from $130 to $325 a month; minimum increase, $32.

18% for $325 to $485; minimum increase, $64.

15% for $485 to $650; minimum increase, $87.

A flat increase of $97 for those earning over $650.

(The big majority of those covered by the contract are in the 20% and 18% categories.)

• **Clause 41:** Double pay for overtime (up from time and one-half now).

• **Clause 42:** Double pay for all work between 6 p.m. and 6 a.m.

• **Clause 43:** Triple pay for overtime work on Sundays.

• **Clause 46:** Travel time paid as time and one-half.

• **Clause 47:** Lunch hour to count as work time.

• **Clause 49:** Family subsidies—to be worked out by tripartite commission of representatives of company, union and Ministry of Labor.

• **Clause 50:** A 10% annual share of profits for workers, in no case less than the equivalent of two months' wages. If the 10% share exceeds that amount, the excess will be deposited to the worker's account in the savings fund to be established under Clause 148.

(Most companies at present pay a flat profit share equivalent to two months' wages. But a 10% share in some cases would be considerably more than that. For example, in 1958, Creole paid $15.4-million in annual profit shares, whereas 10% of its net earnings would have been $23.6 million.)

• **Clause 62:** Free medical and surgical attention for workers and their families. (At present they get free hospitalization only.)

• **Clause 82:** Company houses must provide at least 10 square meters of floor space for every member of the family.

• **Clause 84:** Housing allowance of $6.50 daily, double the present $3.25. (This allowance is provided in cases where the company doesn't furnish housing for camp workers.

• **Clause 94:** Companies must absorb any increase in cost of commissary articles for duration of contract. (At present they absorb an increase of up to 30%, and half of any increase over that.)

• **Clause 96:** Companies will discuss with Fedepetrol a life and disability insurance plan.

• **Clause 109:** No time limit on pay while worker is partially or wholly incapacitated due to professional accident or illness.

• **Clause 110:** Up to 52 weeks pay during incapacity caused by nonprofessional illness.

• **Clause 111:** Company to pay equivalent of two years' earnings to family on natural or accidental death of worker.

• **Clause 112:** Company to contribute $650 for burial expenses of worker or any family dependent.

• **Clause 113:** Company to pay equivalent of five years' earnings to family if worker's death is caused by professional accident or illness.

• **Clause 123:** Company must furnish union with complete list of workers, their classification, salary, etc.

• **Clause 125:** Union dues checkoff of 1% of earnings, with a minimum $3.25 a month. Of this, 20% is to be turned over to Fedepetrol, and 80% to the local union.

• **Clause 129:** Company to contribute an amount equivalent to 1% of salary increases in the new contract, for its duration, to be invested by Fedepetrol in oil workers' housing projects.

• **Clause 133:** Company to provide preschool, primary, secondary, vocational, and technical schools for entire population between 4 and 25 years of age in areas where it operates. (At present companies provide primary schools, and some vocational and technical schools, for children of oil workers.)

• **Clause 148:** Compulsory savings plan for workers. Company to deduct—and match —10% to 20% of worker's earnings. (Under present voluntary company-sponsored plans, worker may deposit up to 10% of his salary in a savings fund, and company adds half of that.)

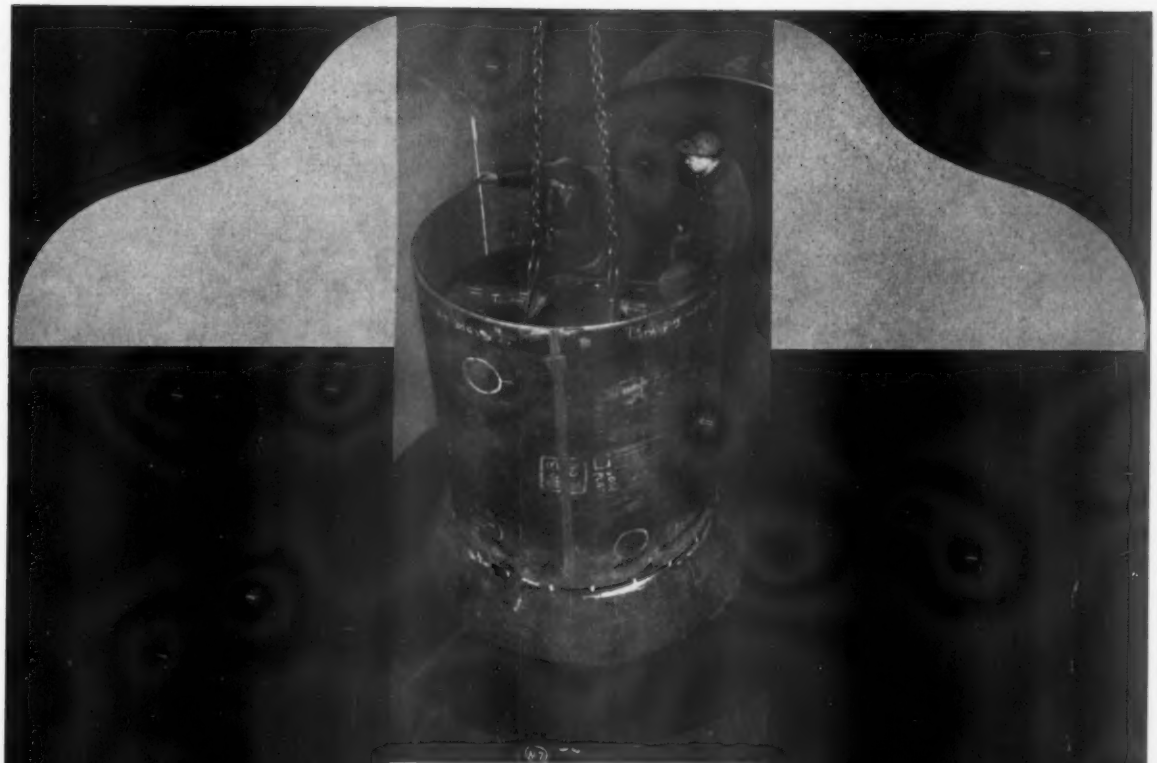
• **Clause 150:** Funds deducted from workers earnings under the compulsory savings plan to be deposited with the Workers Bank, a government housing agency.

(This new plan presumably would supersede company-sponsored plans. It does not call for deposit in the Workers Bank of the company's own contribution under this clause, nor of funds—totaling over $100-million—of present company-sponsored plans.)

• **Clause 159:** Union directors to have the right to inspect workers' service records.

• **Clause 162:** Company to choose from a union list of candidates when it wishes to hire a worker. (In effect, union hiring.)

• **Clause 164:** In case of dispute, interpretation of the contract to be decided by a three-man commission of company and union representatives and the local labor inspector.



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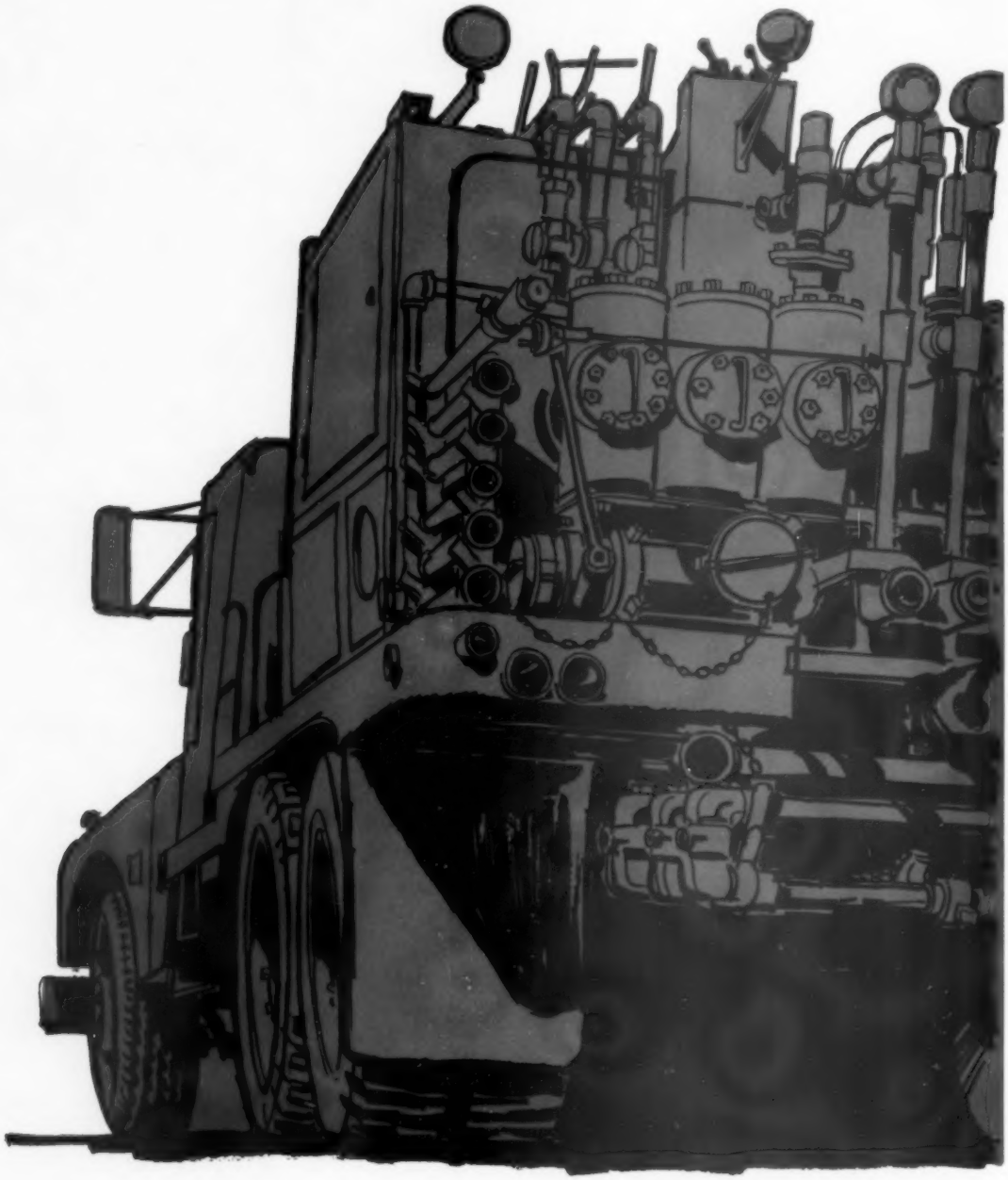
BONUS ON WHEELS

An oil well servicing unit moves out to acidize a new well and bring it to peak production, or to work over an older well — a bonus on wheels. And the muriatic acid used will often be from Frontier. For responsible oil-well service firms have come to rely on Frontier muriatic acid. You can be sure of the purity of Frontier muriatic acid — low in sulphates and iron, free from fluorides and other contaminants.



Frontier muriatic acid is available in tank cars or highway tank-trailers direct from three handily located production points: Wichita, Kansas; Denver City, Texas and Dumas, Texas.

FRONTIER CHEMICAL COMPANY

division VULCAN MATERIALS COMPANY *Wichita*

What's New / AROUND THE WORLD

First Good Show in the Philippines

PHILIPPINES—An oil show on the island of Cebu has stirred hopes of finding the first commercial production here. But oil men were cautious, this week, in their appraisal.

High-gravity crude was found in a wildcat 30 mi. from Toledo, which Republic Resources & Development Corp. is planning to drill to 7,500 ft. A drillstem test yielded 449 ft. of oil, in addition to gas, from a sand between 1,107 ft. and 1,190 ft.

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NETHERLANDS—Caltex will start work this year on a multimillion-dollar crude terminal near Rotterdam with a pipeline to tie in with the line now being built into Germany.

The project, to be completed in early 1962, includes a pier for 65,000-ton tankers initially and 100,000-tonners eventually, crude storage facilities, and a 12-mi. 24-in. crude line to Caltex's Pernis refinery and to the Rotterdam-Rhine pipeline.

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BOLIVIA—Two more private Brazilian companies were granted concessions last week in the "Area B" treaty area. Cia. Petrolifera Brasileira got 750,880 acres, and Petroleo da Bolivia S.A. 666,900 acres.

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BOLIVIA—BJ Service, Inc., has moved into South American well servicing. The Borg-Warner subsidiary has set up operations at Yacuiba, near the Argentine border.

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WEST GERMANY — Halliburton Oil Well Cementing Co. is setting up a subsidiary here with headquarters at Celle, center of one of Germany's biggest oil areas.

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KENYA—Shell and British Petroleum will build a $36-million refinery at Mombasa to meet East African demand, which will be an estimated 28,000 b/d when the plant goes into operation in 1963. Under the agreement with Kenya, other companies in the area—such as Caltex and Stanvac—may participate, but, Shell says, have not requested an interest so far.

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SUDAN—Shell is slated to get exploration rights in northeastern Sudan. This will be the second grant under the new 50-50 profit-sharing oil law. The first went to Italy's state-owned Agip Mineraria.

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INDIA—The Russians have balked at India's request for a bigger loan for a projected 50,000 b/d refinery at Barauni, and negotiations are now stalemated. Indians say the Soviet terms offered would provide for "only a second-class plant."

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SPAIN—The government last week officially issued a corrected list of recent oil bids. The bulletin was dated Sept. 4, which sets the new 30-day period for counter-offers. Corrected Spanish Sahara bids correspond with those shown by PETROLEUM WEEK (PW—Sep.11'59,p46).

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FRANCE—A French-German pipeline construction company has been formed in Paris by Fritz Hirsch Rohrleitungsbau and Josef Haarkhorst, of Germany, and Enterprise Charles Certoux, of France. The new Cie. Europeenne de Construction de Pipelines is capitalized initially at 20-million francs.

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ALGERIA—A $40.4-million loan is being floated to finance development of oil fields in the Edjele area and construction of a pipeline to the Tunisian coast by Creps, a French company owned 35% by Shell. It will invest a total of $100-million this year and a like amount in 1960.

•

KUWAIT—Another attempt to stir interest in forming an Arab Common Market will be made in November when Arab Chambers of Commerce meet in Kuwait. They'll also make a new effort to get Persian Gulf states to form an Arab investment company.

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INDIA—Rumania is offering to sell New Delhi $1-million worth of kerosine against payment in rupees to be used for purchases of Indian iron ore. If accepted, the deal presumably would be handled by the Indian government's newly formed marketing company.

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Wildcats in the News

SENEGAL—A second wildcat in the Dakar region has encountered wet gas 20 mi. east of the city. Soc. Africaine Des Petroles announced that its DN-2 flowed at rate of 3½-million cf/d of gas, with some condensate, on 6-hour test of a 43-ft. sand topped at 2,942 ft. DN-3 will be spudded this week 2½ mi. south of DN-2.

IRAN—The Consortium says it will start testing oil shows at Kuh-I-Binak, its first coastal wildcat, now bottomed at 10,822 ft.

ANGOLA—Gulf Oil is drilling its third wildcat in the Cabinda region after two dry holes. The No. 1 Malembo, now down to 6,300 ft., was spudded in July after the previous No. 1 Bucomazi was abandoned at 9,434 ft.

IRAN — Italy's state-owned Agip Mineraria has spudded its initial Persian Gulf wildcat off the mouth of the Zuhreh River in 15 ft. of water at 29° 56′ 25″ north, 49° 41′ 0″ east. It's over 50 mi. northwest of Indiana Standard's wildcat site on its adjoining offshore tract.

JAPAN—The tenth test at Mitsuke, Niigata prefecture, tested at the rate of 315 b/d of 36-gravity oil through 1⅜-in. choke, from 5,880 ft. Wet gas was also recovered at the rate of 265,000 cf/d.

CUBA—The first of a series of wildcats was spudded last week in Pinar del Rio by Cuban Kewance Oil Co. under a farmout pact with Atlantic Refining. Projected depth is 7,000 ft.

EGYPT—The ninth producer brought in at the new Bakr field looks like the biggest yet. Radio Cairo said No. 14 Bakr was tested by the state-owned General Petroleum Co. at the rate of 3,900 b/d from 2,490-600 ft., one of four pay zones. The well was bottomed at 3,408 ft.

A. H. Gibson

J. H. Renard

J. H. RENARD becomes vice-president, a director, and a member of the executive committee of Sinclair Pipe Line Co., and **A. H. GIBSON** succeeds him as assistant to the president. In his new positions, Renard succeeds **C. F. McCoy,** who recently transferred to Sinclair Oil & Gas Co. **W. H. Sands,** formerly personnel representative, succeeds Gibson as personnel manager of Sinclair Pipe Line. The three men will continue to be located at the company's headquarters in Independence, Kan.

D. S. HODIE becomes assistant division superintendent in Oklahoma, for Cities Service Oil Co., with offices in Lindsay. Bodie, formerly district superintendent at Columbus, Tex., will assist in the organization of the Northeast Purdy unit in Oklahoma. **C. T. Kemerling** moves from Odessa to Lindsay as district clerk, and **George L. Goodman** moves from Columbus to Lindsay as production foreman. **J. W. Wise,** district superintendent in Lindsay, will establish a new district production office in Chickasha, Okla. His enlarged district will include the Seminole and Walters areas and Cities Service leases outside the Northeast Purdy unit in the Lindsay area. The new Chickasha district includes: **Charles L. Coffman,** formerly from Oklahoma City, district engineer; **John D. McCutchan,** Oklahoma City, petroleum engineer; **George E. Rose,** from Lindsay, district clerk; and **John B. McDade,** from Norman, Okla., clerk. Cities Service's Oklahoma City and North Oklahoma operations are being consolidated into the Oklahoma City district, and **R. L. Higginbottom** is superintendent of the enlarged district. **Hugh Riley,** Oklahoma City, is division production superintendent for Cities Service in Oklahoma.

R. B. PHILLIPS has been appointed director of plans and programming in Gulf Oil Corp.'s marketing department, and **J. D. Marquis** has been appointed director of accounting and statistics in that department. Both men will have offices at Gulf's headquarters in Pittsburgh. In his new position, Phillips will assist the departmental coordinator in the development and coordination of worldwide marketing. Marquis will assist the departmental comptroller in providing accounting, financial, and statistical services for the department. Phillips was formerly manager of cost control and budgets in Gulf's New York division office. Marquis was formerly director of analysis and interpretations, reporting to the comptroller, at Pittsburgh.

J. HOWARD MARSHALL has been elected executive vice-president of Signal Oil & Gas Co., Los Angeles. Five men named to newly created positions of senior vice-president are **Charles R. Gaylord, W. T. Hancock, R. W. Heath, O. W. March,** and **G. L. Young.** Marshall and the five senior vice-presidents were also appointed members of Signal's executive committee. Marshall has been vice-president in charge of Signal's exploration department, and a director of the company, since 1952. Before joining Signal, he was president and a director of Ashland Oil & Refining Co., Ashland, Ky. Gaylord joined Hancock Oil Co. in 1958. He has been vice-president and a director of Signal since Signal and Hancock merged in late 1958. Hancock, presently a vice-president and director of Signal, is in charge of manufacturing for the company. He was formerly executive vice-president of Hancock Oil. Heath, a Signal vice-president and director who has been with the company since 1923, is in charge of the gas department. March, who has been a vice-president and director of the company since 1924, has been in charge of Signal's retail marketing operations for the past several years. Young, with the company since 1925, is vice-president in charge of foreign operations and a director.

J. H. Marshall

J. E. Wilson

J. E. WILSON has been nominated to succeed **E. D. Cumming,** vice-president of Shell Oil Co.'s Houston area, when Cumming retires at the end of the year. Wilson is acting Houston area exploration manager for the company. Wilson, with Shell since 1938, was named manager of the Rocky Mountain exploration department at Denver in 1955. Three years later, he transferred to Shell Development Co., in Houston as director of exploration research. Earlier this year, he was named to his present position.

FREDERICK A. WOLTHOFF moves from credit manager to assistant treasurer of Hartol Petroleum Corp., New York. He will also continue his supervision of the credit department. Wolthoff joined the company in 1943.

ROBERT L. SHICK, formerly general superintendent of Tekoil Corp., Dallas, moves to the newly created office of vice-president and production manager. In his new capacity, he will direct the production, engineering and geological operations of the company. **Kenneth Davison,** who has been vice-president in charge of operations, has been appointed to the post of executive vice-president.

F. WILLIAM SCHUMACHER assumes the new position of petroleum research coordinator at Esso Standard Oil Co.'s headquarters, in New York. He was formerly manager of Esso's Everett (Mass.) refinery. **William J. Sheridan,** operations superintendent at the company's Bayway refinery, Linden, N. J., succeeds Schumacher at Everett.

F. W. Schumacher

H. A. Cunningham

H. A. CUNNINGHAM is the new vice-president and general sales manager of marketing for Ada Oil Co., Houston. He replaces **George W. Meyer,** who becomes vice-president of trade relations. Cunningham joined Ada a short time ago as manager of merchandising. Before that, he was manager of petroleum company sales for B. F. Goodrich Co. **Charles G. Sones** and **Earl G. Gatrell** have been appointed assistant general sales managers of marketing. They will assist Cunningham in supervising and coordinating all operations within Ada's marketing department. Ada distributes Phillips "66" products on the Texas Gulf Coast.

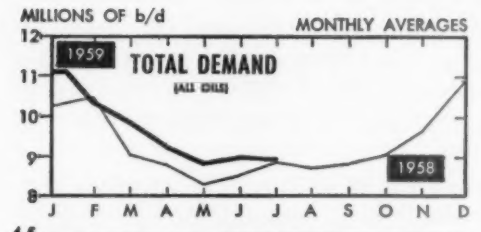
PHILIP F. NIND, general manager in Beirut for Shell Oil Co.'s affiliates in Lebanon, Syria, and Cyprus, will take up a new post with Shell in London, effective Oct. 1. He has been manager of the Shell Co. of Syria, Ltd., Shell Co. of Jordan, Ltd., and Shell Co. of Cyprus, Ltd. for the past two years. Succeeding him in Beirut is **C.D. Van Lennep** of the Royal Dutch Co.

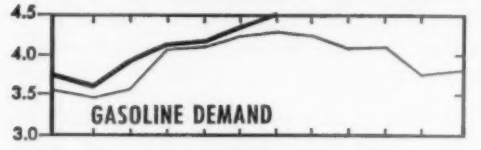
R. S. BLOUNT has been appointed manager of wholesale sales and **M. E. POWLEY** manager of retail sales for Cities Service Oil Co. (Pa.). Blount joined the company in 1929, and prior to his new appointment served as sales manager of the Boston region. Powley was formerly New York regional manager.

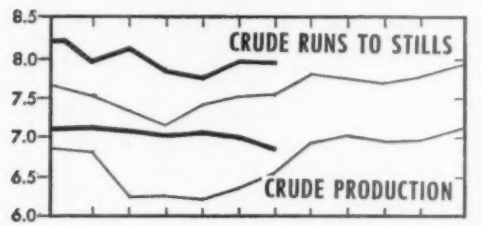
CHARLES E. FARNSWORTH becomes product manager-plastics, a new division in the product management department of Enjay Co. In his new position, he will be responsible for manufacturing coordination, technical service, and transportation and distribution.

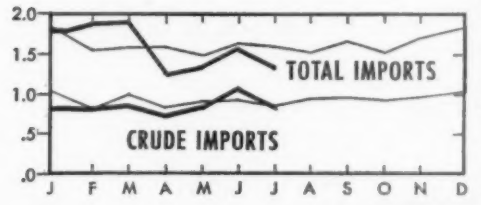
PETROLEUM WEEK'S

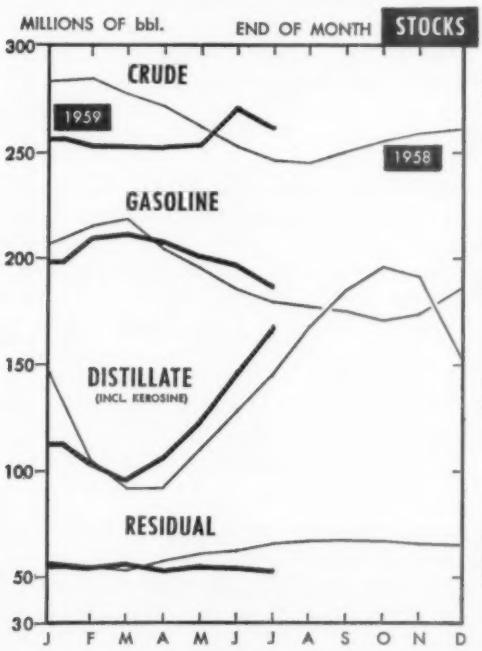
Fingertip Figures











Supply-Demand Figures for August

(millions of b/d)

	August 1959	% Change from year ago	8 Months 1959	% Change from year ago
Total Demand (Inc. Exports)	8.961	+ 3.1	9.604	+ 5.2
Gasoline	4.402	+ 3.0	4.140	+ 4.8
Distillates (Inc. Kerosine)	1.427	+13.0	2.084	+ 1.9
Residual	1.259	— 5.5	1.632	+10.8
Total Supply	9.102	— 2.1	9.730	+ 8.8
Domestic Crude	6.810	— 1.9	7.100	+ 8.6
Nat. Gas Liquids	.800	+ 0.8	.854	+ 9.3
Total Domestic	7.610	— 1.6	7.954	+ 8.7
Product Imports	.515	—14.2	.828	+19.1
Total Imports	1.492	— 4.5	1.776	+ 9.1

Figures for period ended September 11, except as noted

RUNS TO STILLS

Latest week	8.181
Previous week	8.132
Year ago	7.845

CRUDE PRODUCTION

Latest week	6.813
Previous week	6.821
Year ago	7.009

TOTAL IMPORTS

Latest week	1.674
Previous week	1.707
Year ago	1.277

CRUDE IMPORTS

Latest week	1.046
Previous week	1.195
Year ago	.670

CRUDE STOCKS

Week ended 9-5	251.9
Previous week	253.4
Year ago	243.3

GASOLINE

Latest week	183.5
Previous week	181.5
Year ago	172.9

DISTILLATES

Latest week	201.4
Previous week	194.6
Year ago	175.8

RESIDUAL

Latest week	58.8
Previous week	57.5
Year ago	68.4

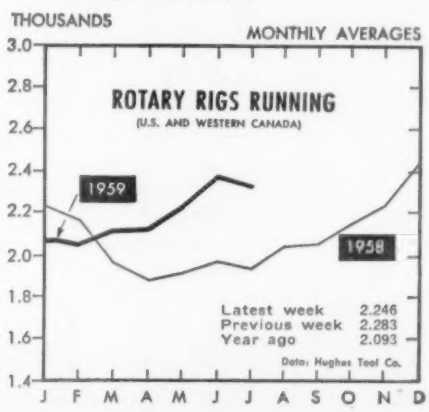
Each passing month heralds a far darker outlook for the petroleum industry in 1959 than anyone would have suspected eight months ago.

Total inventories now are nearly 60-million bbl. higher than industry officials estimated earlier would be desirable at this time of the year.

With the peak gasoline demand period past, the carryover motor fuel stocks are the highest ever at mid-September; distillates inventories are mounting far in excess of anticipated requirements for fall and winter; only residual fuel inventories show any semblance of being in balance.

With demand in the first eight months of 1959 running 5.2% ahead of a year ago, total new supply showed a gain of 8.8% and refinery runs were up 7.2%.

Refinery runs in August, averaging 8,104,000 b/d, were up 3.6% over the previous August and were 2.3% higher than in July, despite the comments by many major company officials that runs should be reduced. So far in September, runs are exceeding 8-million b/d.



The Market Trend

Midwest Prospect: Shapeup or Shakedown

Every major product in the Midwest is in a bad spot at the moment —each for a somewhat different reason, if you disallow the common denominator of excessive inventories.

Gasoline prices already have started to drop along the Great Lakes Pipe Line (both branded and unbranded are off 0.25¢ openly this month, with an additional 0.25¢ shading reported.) And Chicago prices are threatening to take the same cue.

Distillates still aren't moving out of primary into secondary storage despite the fact that Oklahoma Group 3 postings are 1¢ below last year. Chicago postings are down 0.375¢ from a year ago. And residual is punch-drunk after two months of battling the buying apathy caused by the steel strike, and appears ready for the long count.

The chief problem with gasoline is seasonal jitteriness. Refiners contend there's no good reason for gasoline price-cutting during the high-demand, early-fall weeks—but they admit that the unchanging sales psychology year after year is to start offering discounts after Labor Day to "get ready for winter."

Jobber caginess is hurting distillates. Refiners contend distillate prices are as attractive to jobbers now as they'll be all season, but jobbers generally are concentrating on cleaning up their consumer IOU's from last year. They seem fully confident that today's fuel oil prices will still be available in mid-October.

Shortage of storage weighs heavily on residuals. A Chicago wholesaler expresses the prevailing view in his forecast that, "I'll be at the end of my rope by mid-September if the strike doesn't end by then—there's no more room to put the product now being shipped to me. I'll have to start taking drastic steps to move it into someone else's storage."

All is not gloom and doom beyond repair, though. A combination of lower crude runs, continuing good demand, and steady nerves could stop a gasoline price tailspin. And early autumn might scare fuel oil buyers into a purchasing mood. And a steel industry return to work any time soon would put strength back in the heavy ends.

Two Birds, One Stone:

Chicago-area gasoline pump postings might take a sharp contraseasonal jump in next fortnight. Most dealers now have signed contracts with the Teamsters union that will raise their labor costs about 5% immediately. Some may pass along this cost to their customers at the same time they tack the federal gasoline tax boost onto postings. Others hope to hold the line on labor costs by reducing their service hours.

One Crude, Two Prices:

California crude prices still are apart. Standard of California's Sept. 11 downward adjustment did not go so deep as Union Oil's cuts on Sept. 1. Stancal's cuts, ranging from 5¢ to 25¢ a bbl., averaged out at about 14¢ a bbl. Union's reductions were from 10¢ to 50¢ a bbl.

With prices for clean products fairly steady on the West Coast, and residual fuel prices on the strong side (a major paid $1.65 to another major for 500,000 bbl. of bunker "C" fuel for immediate lifting and shipment to the East Coast), thinking is that Union may lift its price sights to meet Stancal's postings (page 73).

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of September 14

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem. 12.25-13
- Gasoline, 92 oct reg. 11-11.5
- Kerosine 8.125-10.375
- Heating oil, No. 2. 7.75-9.875
- Gas oil, 48-52 d.i. 8-10.125
- Fuel oil, bunker "C" $2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130. 15.25
- Gasoline, 93 oct research prem. 11.25
- Gasoline, 87 oct research reg. 10.375
- Gasoline, 79 oct research. 9.625
- Gasoline, 70-72 oct motor method. 9.5
- Kerosine 8.375
- Heating oil, No. 2. 7.75-8.125
- Gas oil, 48-52, d.i. 8-8.25
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- Kerosine 9.35-9.6
- Heating oil, No. 2. 8.85-9.1
- Fuel oil, No. 6. $2.37-2.47

Okla-Group 3, northern shpt., bulk
- **Gasoline, 91 oct reg. 11.75-12.25↓**
- Kerosine 9.5-9.75
- Heating oil, No. 2. 8-8.5
- Fuel oil, No. 6. $1.40-1.80

Chicago, bulk
- Gasoline, 91 oct reg. 12
- Heating oil, No. 2. 9.125-10.85
- Fuel oil, No. 6 high sulfur. 7.4-7.5

Los Angeles, rack
- **Gasoline, 88 oct reg. 11.65↑-12.65**
- Diesel fuel, PS 200. 8.5-11.25
- Light fuel, PS 300. $2.80
- Heavy fuel, PS 400. $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3. 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3). 5
- Propane, Baton Rouge. 5.625-5.875

Pennsylvania Lubes
- **Bright stock, 25 p.t. 22-23↑**
- **200 vis. neutral 25 p.t. 25↑**

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. 24-25
- Neutral, solvent 200-210 vis. 20.5-21.5

Gulf Coast Lubes
- Bright stock, solvent 95 v.i. 24
- Neutral, solvent, 200 vis. 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130. 16.5
- Gasoline, 79 oct research. 10
- Kerosine 10.125
- Gas oil, 48 d.i. minimum. 9.625

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 $2.77-2.97
- North Dakota, 36.0-36.9 2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9. 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9. 2.92-3.22
  - West Texas, sweet, 36.0-36.9. 3.00
  - West Texas, N. M., inter., 36.0-36.9. 2.93
  - West Texas, N. M., sour, 32.0-32.9. 2.71
  - East Texas, flat. 3.05-3.25
  - Mirando, 28.0-28.9 3.31
- Illinois Basin, flat. 3.00
- **Pennsylvania Grade, Bradford dist., flat. 4.40↑**
- **California, Signal Hill, 21.0-21.9. 2.22↓-2.32↓†**
- North Louisiana-Arkansas, 36.0-36.9. 2.77-3.02
- Wyoming, sweet, 36.0-36.9. 2.85-2.90
- Wyoming, sour, 32.0-32.9. 2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.) 2.38
- Leduc-Woodbend (Alta.) 2.53
- Redwater (Alta.) 2.42
- Steelman A (Sask.) 2.435
- Virden (Man.) 2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido. $3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz. 3.10
- Oficina, 35.0-35.9, Puerto la Cruz. 2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay. 2.30
- Bachaquero, flat, Las Piedras. 1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo. 2.83
- Lagunillas Heavy, flat, Cardon. 2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura. $1.89-1.90
- Safaniya, 27.0-27.9, Ras Tanura. 1.50
- Iran, 34.0-34.9, Bandar Mashur. 1.86
- Iran, 34.0-34.9, Abadan. 1.81
- Iraq, 35.0-35.9, Fao 1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi. 1.67
- Qatar, 41.0-41.9, Umm Said. 2.05
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud. 1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud. 1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon. $2.27
- Iraqi, 36.0-36.9, Tripoli, Banias. 2.31

Far East, Cargoes FOB Lutong, Sarawak
- Seria Light, flat. $2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean	(USMC—35%)	$1.85
U.S. Gulf-New York, dirty	(USMC—32½%)	$1.92
NWI-USNH, dirty	(USMC—50%)	$1.38
NWI-UK/Cont., dirty	(Scale—30%)	22.9*
Persian Gulf-UK/Cont., dirty	(Scale—65%)	23/3*
Persian Gulf-USNH, dirty	(USMC—75%)	$3.18

**Sterling.*

Jobbers Seek New Credit Source

- This week Texas jobbers will launch an all-out drive to form a small business investment company.
- It would open an entirely new source of long-term expansion capital for Texas oil marketers.

The Texas Oil Jobbers Assn. is one-third of the way along toward forming a small business investment company.

Since June, 32 Texas jobbers have pledged $50,000 toward the goal of $150,000 needed for the establishment of the company. When they reach this goal, the Small Business Administration will add another $150,000 to the SBIC, according to the plans set up by Congress last year (PW—May1'59,p54).

This week the Texas jobbers will begin an all-out drive for pledges, Jamie N. Clark, executive secretary, told PETROLEUM WEEK. "The pledges we have received thus far," he said, "are in response to a single bulletin we put out on this in June."

Starting this week, the jobbers will distribute additional bulletins, and will begin talking up the SBIC plan at zone and regional meetings.

The investment company will provide a source of long-term capital that is badly needed by Texas marketers, according to L. K. Long, chairman of TOJA.

The banks can't handle the long-term capital needs of jobbers, Long says. And most other lending institutions won't enter into jobber finance, he adds, because the marketers are often considered too small and risky—and, in many cases, do not have the experience that creditors require.

Most jobbers need loans that they can amortize over 15 to 20 years, Long explains. The SBIC could provide long-term loans for 5 to 20 years' duration, and also would be a source of equity capital through its purchase of convertible debentures from jobber corporations.

In many cases, especially in service-station expansion, the jobbers can obtain money from supplying companies, Long says. But this gives the supplier a certain amount of control over jobbers, which many jobbers want to avoid.

To join the SBIC, members of the jobbers association and the Texas Petroleum Marketers Assn., which affiliated with TOJA in 1958, are required to invest between $1,000 and $3,000 in negotiable common stock.

The funds accumulated in this manner—when added to SBA's subordinated debenture loans—will provide a source of long-term capital to qualified oil marketers. According to Clark, the jobbers themselves will not evaluate the loan applications. A banking representative, or other qualified administrator with credit experience, will be appointed to handle this job.

In this way, the jobbers hope to avoid any conflicts of interest that may arise among members, when, for example, the SBIC considers loans to its own members.

Thus far, the Texas jobbers are the only oil marketing group to begin setting up an SBIC. But jobbers all over the country are watching the Texas program, and some are considering setting up their own SBICs.

Jack Sweeney, speaking for the Illinois Petroleum Marketers Assn., told PETROLEUM WEEK last week that his association will discuss the SBIC program at meetings this month and next. Sweeney blamed skyrocketing real estate costs for forcing the jobbers into a "very, very tight" financial position.

Elizabeth Walker, executive secretary of the Tennessee Oil Men's Assn., says her group has written to the Texas jobbers for information on setting up an SBIC. Although the Tennessee group feels that the time has not yet come to initiate work on an SBIC, Miss Walker says, they feel such a company could be "something very valuable."

Although the majority of jobbers and suppliers interviewed in the East do not believe that jobber expansion plans have become eroded by tight money conditions, here and there some jobbers did express concern.

George Savory, president of Savory Oil Co., Binghamton, N.Y., is typical of the latter group.

Savory, who just completed a large terminal expansion, admits that if he were planning an expansion today he'd probably reconsider the move—and perhaps even give up the idea. "These high interest rates will kill you," he says.

Despite their advantages, small business investment companies will provide no panacea for the financial problems of jobbers.

First of all, an SBIC is not a source of "cheap" money. The investment companies will be subject to the same economic tug-of-war that besets all lenders and borrowers, according to Clark.

With interest rates climbing and money getting scarce, the directors of the Texas SBIC will be just as hesitant to make loans for risky investments as other lending institutions would be.

Second, the SBIC will have to charge more than 5%—the rate at which it borrows money from SBA.

This floor on interest rates has kept the Tennessee jobbers, at least, from giving greater consideration to an SBIC. Unless general interest rates rise a great deal more than they have already, SBIC loans at around 6% would not generally be less expensive than loans available from other creditors.

The increasing scarcity of money will bring a greater call for SBICs—but it will also tend to discourage investors from putting their money into an SBIC when more attractive investments are available.

Albert J. Toole, Jr., president of the Bankers Small Business Investment Corp., in Dallas (an SBIC planned by nine Dallas bankers), told PETROLEUM WEEK last week that interest in small business investment companies is definitely waning because of the shortage of money.

Investors, he says, are now trying to ward off loan applications, rather than seek them.

The Dallas banker's investment company, and another SBIC proposed by Dallas oil executives—Texas Continental Investment Co., Inc.—are

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both still in the setting-up stages. Neither is ready to make loans yet.

What the SBIC program really needs, observers in Washington report, is a massive transfusion of federal aid. But the present Administration—preoccupied with budget balancing and debt management—is distinctly cool to such an idea.

The Treasury is willing to cooperate to the point of exempting SBICs from the personal holding company regulation and allowing SBICs to retain earnings.

But SBIC supporters say further concessions are needed to get the SBIC program rolling—more federal aid, greater tax concessions, and the right to take mortgages with stock-option privileges.

There is maneuvering in Congress to beef up the SBIC program, however. Both Senate and House small business committees are looking into the whole subject. A Senate banking subcommittee has approved only enough funds for SBA loans through June 30, 1960. This will force a congressional review of SBA programs next year.

Such a review might result in a liberalizing of SBIC rules—making the investment companies more attractive to investors.

What's New / IN MARKETING

"Every time a consumer of oil converts to gas, or a new potential market for oil is captured by gas, the revenue to the oil industry is reduced to 20%, or less, of what it would have been," C. E. Kramb, home heating and farm manager for Gulf Oil Corp., said this week.

Kramb told the Illinois Petroleum Marketers Assn. at its management institute that because gas "is relatively free from the influence of the economic laws that govern oil prices, gas sells at the wellhead for only one-fifth the price of crude oil. The price comparison is based on heat content, since it's on that basis that the two fuels compete."

■

Motor vehicle registrations will top 70-million this year, according to the U. S. Bureau of Public Roads. This is a 3.1% increase over last year's 68,299,408. Passenger cars will account for 58.6-million of this year's registrations, and the increase of 3.0% over last year.

Engineering

A new electronic processing machine may speed up the job of printing the thousands of credit cards oil marketers mail out each year.

Dashew Business Machines, Inc., has applied a "servodrive" mechanism to the task of punching out embossed plastic cards. The new data-embossing machine will stamp out 14,000 characters per hour in embossing plates for use on credit cards, the company says.

■

A "toy" furnace may bring cleaner-burning, more efficient heating fuels as well as improved burner designs.

The new "Micro Test Burner" was developed by Socony Mobil Oil Co. to fill "the need for a dependable miniature laboratory oil burner which would permit combustion under closely controlled conditions," according to R. A. Billmeier, chemist at Socony's Brooklyn (N. Y.) plant.

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Cities Service, for example, searches four continents for the oil to meet his request. It has its own "navy" of ocean going tankers. It uses a pipeline network that could girdle the globe. Its investment in modern facilities exceeds a billion dollars and its employees and stockholders number nearly a quarter of a million.

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D. A. Bessmer

H. E. Markley

D. A. BESSMER has been elected president of Timken Roller Bearing Co., Canton, Ohio, and **H. E. MARKLEY** succeeds him as executive vice-president of that company. Bessmer succeeds **William E. Umstattd,** who will continue to serve as director and chairman of the executive committee. **H. H. Timken, Jr.,** has relinquished his title of executive vice-president, but continues as chairman of the board. **W. R. Timken** is giving up his title of vice-president, but continues as chairman of the finance committee. Bessmer, who joined Timken in 1933, was named assistant to the president in 1950. He was elected a vice-president in 1953, and has been executive vice-president since 1957. Markley has been vice-president since 1958. Before that, he was assistant to the president.

J. R. BECHTOLD and **LEE DRAKE** have been appointed to the newly formed special projects and services division of Continental-Emsco Co., in Dallas. Both men will hold the position of assistant to the vice-president of special projects and services. Bechtold was formerly manager of structural sales, and Drake formerly was associated with the manufacturing engineering activities of the company.

BEN DAVIDSON will be in charge of sales of precision test instruments, power supplies, wire-wound components, and industrial instrumentation systems for Electrodynamic Instrument Corp., Houston. EIC manufacturers precision electronic instruments and systems for the petroleum industry. Davidson was formerly branch sales manager for Koch Engineering & Sales Co., and sales representative for Harrison Equipment Co. He is a member of the Geophysical Society of Houston.

ASSOCIATED ENGINEERS OF HOUSTON has been appointed sales and service representative of Baker Filtration Co., El Monte, Calif., manufacturer of diatomaceous earth filters for large-scale water disposal and secondary recovery. **Gordon Tillman** will be Baker Filtration coordinator and expediter in the Southwest.

LANE-WELLS CO., one of the Dresser Industries, has opened a new technical oilfield service location in Atwood, Kan. Charles Farr, formerly with the company at Stockton, Kan., will be operating engineer in charge of the new station, which will serve northwestern Kansas and south central Nebraska.

RICHARD E. MILLER has been named district manager of the Chicago district office of Rockwell Mfg. Co.'s meter and valve division. Miller, who joined Rockwell's market research department in 1947, has been industrial meter sales manager in the petroleum and industrial division since 1958.

ROBERT D. EVANS heads the technical sales and service office in Houston for Girdler Catalysts, Louisville, Ky., a unit of Chemetron Corp.'s chemical products division. He succeeds Merle R. Likins, who has joined the technical service staff at Girdler Catalysts' headquarters in Louisville. Evans has been with Girdler Catalysts since 1957.

KEN KENDALL has joined the sales staff of Daniel Orifice Fitting Co., in Los Angeles. Kendall has been a sales engineer for Rockwell Mfg. Co. for the past five years.

DAVID R. RUFFIN has joined Rayonier, Inc., New York, as a special field representative to the domestic oil industry. Ruffin will handle the sales and service functions of the company's line of Rayflo oil well drilling mud dispersants. Ruffin has been a drilling mud engineer for Sunray Mid-Continent Oil Co.

L. Fagg

L. C. Graves

LEE FAGG has been appointed assistant manager of sales for Bethlehem Steel Co.'s Supply Division, and **L. C. GRAVES** sales manager of subsurface production equipment. Both men will be located in Tulsa, and will be under the direction of **J. V. Spalding,** general manager of sales. Fagg's responsibilities in his newly created position will be the promotion of sales of Bethlehem wire rope and rotary drilling equipment and accessories. He will also be in charge of all export sales of Bethlehem's manufactured equipment and accessory materials. Fagg was most recently manager of machinery sales for all Bethlehem Supply's manufactured products. Graves, with Bethlehem since 1939, became special representative at the Gulf Coast division for subsurface production equipment in 1954. In 1958 he transferred to Tulsa with the same title, but his duties were expanded to include the entire Mid-Continent area. Graves will be in charge of sales of sucker rods, subsurface pumps, and related bottom-hole equipment.

WILLIAM T. ADAMS becomes sales division manager in Canada for Reed Roller Bit Co., Houston. He was formerly assistant to the sales division manager for the Southeastern division of the company, headquartered in New Orleans.

C. P. GILLESPIE and **WM. L. HENDERSON** are sales representatives at a new warehouse at Houma, La., recently opened by Alco Products, Inc.

MARSHALL L. STIRLING has been named special representative to the

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oil, gas, and chemical industries for the buildings division of Butler Mfg. Co., with offices in Kansas City, Mo. He was formerly sales manager of the company's Union Tank Division, in Houston, which has recently been purchased by Maloney-Crawford Tank & Mfg. Co., of Tulsa, Okla.

HECTOR P. BONCHER assumes the new position of vice-president of marketing for Dresser Industries, Inc., Dallas. The position is part of a new marketing program for Dresser and its divisions. Boncher was most recently operating vice-president for the parent corporation. Before that, he was general manager of Dresser Mfg. Division, Bradford, Pa.

H. P. Boncher

L. H. Busby

LEONARD H. BUSBY is the new southern regional manager of Security Engineering Division, Dallas, one of the Dresser Industries. Busby, formerly a regional sales representative for the bit manufacturer, will supervise sales activities in South and East Texas, Louisiana, southern Arkansas, Mississippi, Alabama, and Florida. Busby will be headquartered in the division's main plant, in Dallas.

R. L. Terrell

N. C. Dezendorf

W. H. Harvey

B. B. Brownell

NELSON C. DEZENDORF has been elected a director of General Motors Corp. and vice-president in charge of its Dayton, Household Appliance & Electro-Motive Group. **RICHARD L. TERRELL, WILLIAM H. HARVEY,** and **B. B. BROWNELL** have been assigned to new positions in the Electro-Motive division. Terrell was elected a General Motors vice-president, and was appointed to succeed Dezendorf as general manager of the division. Harvey was named to the newly created position of director of production in that division, and Brownell to the newly created position of director of engineering and research. Harvey was formerly coordinator of new products, and Brownell chief engineer, of the Electro-Motive division. **Thomas B. Dilworth,** formerly assistant chief engineer, succeeds Brownell. The new assignments coincide with organizational changes that move the Electro-Motive, Cleveland Diesel, and Diesel Equipment divisions, and General Motors Diesel Ltd., from the Engine Group to the Dayton, Household Appliance & Electro-Motive group.

JERRY F. BOUTWELL is the new sales manager of the oil well pump section of Byron Jackson Tools, Inc., Los Angeles. Boutwell, who has had 12 years' experience in submersible pump sales, will have his headquarters at the company's Tulsa plant.

J. F. Boutwell

B. L. Smiley

BOB L. SMILEY becomes sales engineer for northern division of Engineered Oil Tools, Inc., at Oklahoma City. He was previously associated with Johnston Testers, Inc. He will represent Engineered Oil Tools in north Texas, the Panhandle, Oklahoma, Kansas, and Canada. He will assist **Ed Williams,** Engineered Oil Tools northern division manager.

ADVERTISERS IN THIS ISSUE

Alten Foundry & Machine Works, Inc. ... 21
Aluminum Co. of America ... 4-5
Armour Industrial Chemical Corp. ... 54-55
Axelson Mfg. Div. of U. S. Industries ... 32-33
Black, Sivalls & Bryson, Inc. Oilfield Equip. Div. ... 14
Cameron Iron Works, Inc. ... 8
Cities Service Oil, Inc. ... 77
Dowell ... Cover 3
Drilling Specialties Co. ... 42
Du Pont, Petrol Chem. Div. ... 51-52
Eastman Chem Prods. Inc. ... 11
Edward Valves, Inc. ... 53
Electro Motive Div. GMC ... 26-27
Ethyl Corp. ... 23
First City Nat'l Bank of Houston ... 2
First Nat'l Bank in Dallas ... Cover 2
First Nat'l Bank of Midland ... 34
Frontier Chemical Co. ... 68
Goodyear Tire & Rubber Co. ... 1
Grove Valve & Regulator Co. ... 63
Harbison-Fischer Mfg. Co. ... 39
Hillman-Kelley ... 43
Ingersoll-Rand Co. ... 29
Kellogg Co. M. W. ... Cover 4
Liberty National Bank & Trust Co. ... 76
Lone Star Steel Co. ... 6-7
Milwhite Mud Sales Co. ... 35
Mission Mfg. Co. ... 24
National Lead Co. ... 37-38
Norris, W. C. Mfr. Div. of Dover Corp. ... 58
Oakite Products Inc. ... 56
Otis Engineering Corp. ... 57
Petroleum Electric Power Assn. ... 61
Price Co., H. C. ... 19
Procon, Inc. ... 30
Rector Well Equipment Co., Inc. ... 65
Republic Nat'l Bank of Dallas ... 20
Scott-Rice Co. ... 78
Shell Oil Co. ... 50
Smith Corp. A. O. (Tubular) ... 44-45
Sun Shipbuilding & Dry Dock Co. ... 67
Tex-Tube Inc. ... 12-13
Transcontinental Gas Pipe Line Corp. ... 60
Union Asbestos & Rubber Co. ... 48
United States Borax & Chemical Corp. ... 62
United States Rubber Co. ... 40-41
United States Steel Corp., Products Div. ... 75
Universal Oil Prods. Co. ... 47
Vogt Machine Co., Henry ... 49

Professional Services ... 78

Classified Advertising
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Selling Opportunities Offered ... 78
Business Opportunities ... 78

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This Plan Would Be a Headache

FOR THOSE WHOSE ACTIONS COULD LEAD to federal utility-type controls over the oil industry, we would like to cite just one of the mathematical headaches such regulation could bring.

According to The Wall Street Journal, the federally fixed price of milk in Boston is computed by the following formula:

$$\frac{\left(\frac{a}{1.143}\right)+\left(\frac{bc}{15.34}\right)+\left[\left(\frac{d}{884}\times.6\right)+\left(\frac{e}{1.458}\times.4\right)\right]}{3}\times.90\times1.00$$

The answer obtained from that is multiplied by 5.592, to which is added 0.54. This provides the controlled price. The various factors used in the formula include the wholesale commodity price index, estimated per-capita income in Boston, the cost of labor and cattle feed to farmer, and so on.

There are 76 such marketing orders, regulating about 60% of the nation's supply of milk bottled for drinking.

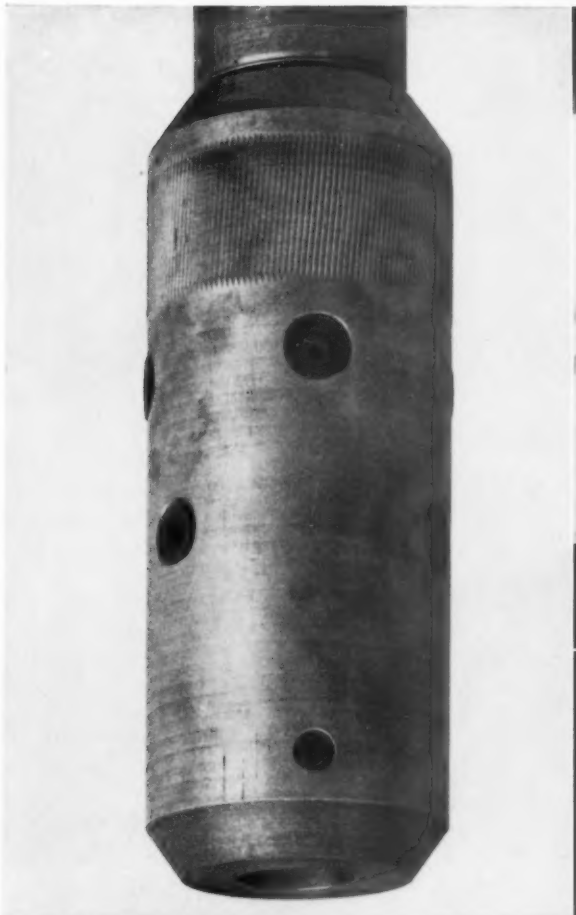
Under federal utility controls over oil, undoubtedly somewhat similar formulas could be derived to regulate the prices of gasoline and other petroleum products in all areas from Augusta, Me., to Zigzag, Ore.

But would it help? In spite of the complicated formula for determining milk prices, there are still, for example, milk price "wars" in many areas of the country.

No Consideration Given to U.S. Producer

CANADA'S ROYAL COMMISSION ON ENERGY was entirely within its rights in urging expansion of markets for that country's crude. But it was a bit presumptuous in asking substantial enlargement of the markets in the U.S.

For, in so doing, the commission in reality asked that markets for the U.S. domestic producer be restricted to make more room for Canadian crude. In this day of a worldwide surplus, it's a little difficult to understand why every country feels that the U.S. should absorb its surplus, But that appears to be the attitude—an attitude without concern for what might happen to the U.S. producer, whose production has been curtailed for years because of imports.



Here is the single-stage tool used in Abrasijet. The special-alloy jet-nozzles may be used in combinations of from two to seven jets. There is also a multi-stage tool with jets in three horizontal planes. Sliding sleeves permit the opening of the jets in each plane as needed.

Four open jets are shown in this demonstration. Abrasive-laden fluid, blasting through these nozzles, can enlarge open holes, remove insoluble deposits, cut slots in formations, and perforate casing without explosives.

This photograph shows a 12-inch long limestone block that has been penetrated with Abrasijet. Notice the large diameter and smoothness of the hole which was made in less than eight minutes. In the same test, J-55 casing was perforated in 23 seconds.

DOWELL ANNOUNCES ABRASIJET

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These photographs show the tool used in Abrasijet*, Dowell's *fast* new abrasive jetting service; and the way it works to solve oil and gas well problems that have been extremely difficult or impossible in the past.

Abrasive-laden water, oil or acid is pumped through jet nozzles against the pipe or formation. Sand, flint or steel pellets may be used as the abrasive.

Abrasijet is used to remove scale from formation faces or casing. It is used to perforate casing. It is also used to enlarge open holes, and to create slots to reduce formation breakdown pressures in acidizing or fracturing treatments.

When Abrasijet is used ahead of stimulation services, the casing can be perforated on the same set-up—without the expense of calling a special perforating unit. The stimulation treatment can usually proceed without the need of removing the tool from the well.

Since the action is primarily mechanical, Abrasijet removes deposits that resist acid. Because no explosives are used, there is no danger of shattering cement or splitting pipe.

Although Abrasijet was first used to clean up old water injection wells, operators are finding new uses for the service every day.

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(Signed) **F. J. SANDERS, Engineering Manager**
The Standard Oil Company (Ohio)
Cleveland, Ohio

The above is an excerpt from the letter of acceptance from The Standard Oil Company (Ohio) to The M. W. Kellogg Company for SOHIO's recently dedicated 60,000 BPSD refinery at Toledo. Kellogg is privileged to have been able to work with Dr. Sanders and the many others at SOHIO in making this highly integrated $40 million refinery an economic success. For those wishing to obtain the complete story on the project, write Kellogg for the SOHIO Kelloggram—a 20-page booklet devoted to the refinery's engineering, construction, and operation.

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